

P A L A M P I E V

SOVIET
KAZAKHSTAN

FOREIGN LANGUAGES PUBLISHING HOUSE

MOSCOW 1958

TRANSLATED FROM THE RUSSIAN

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СОБЕТСКИЙ КАЗАКШАН

Printed in the Union of Soviet Socialist Republics

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INTRODUCTION

he Kazakh Soviet Socialist Republic extends from the Caspian Sea and the mouth of the Volga to the western borders of China, from the steppes of Siberia to the sun-scorched deserts of Central Asia.

Kazakhstan is the second largest republic of the Soviet Union, coming after the Russian Federation (R.S.F.S.R.). It comes third for population—after the Russian Federation and the Ukraine. It covers an area of 1,263,000 sq. m. This vast territory is as large as the British Isles, France, Belgium, Germany, Denmark, Sweden, Austria, Switzerland, Italy, Spain and Portugal taken together. From north to south it measures over 1,000 miles and 1,800 from west to east.

On the west the border runs along the monotonous desert and steppe of the Caspian Lowlands. Turning eastward in the vicinity of the town of Uralsk, it cuts through the south-

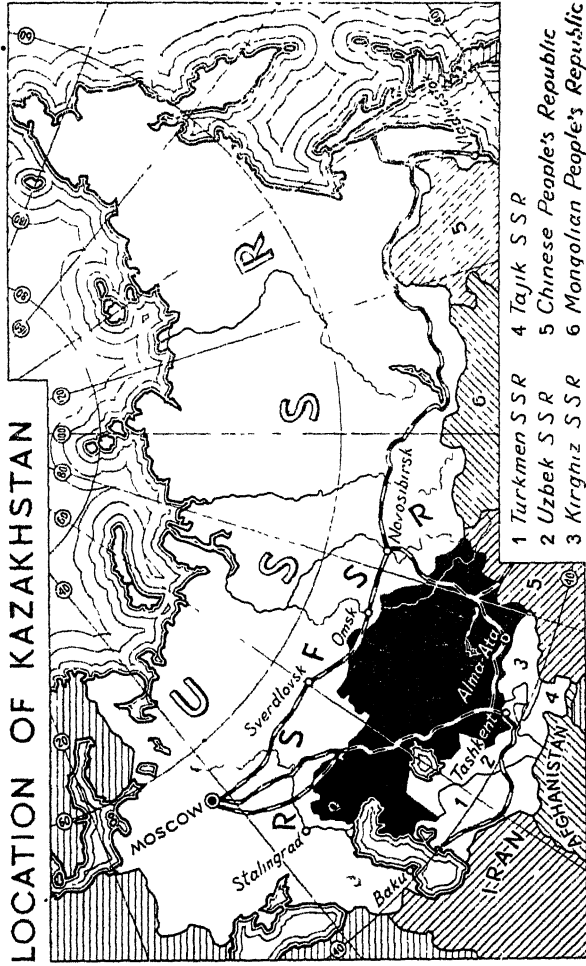
ern spur of the Ural Mountains. Beyond the Urals, it veers northward and continues in an easterly direction along the rolling expanses of the West-Siberian Lowlands. After crossing the River Irtysh, it bends south-west along the Kulunda Steppe to the foothills of the Altai Mountains and continues along the range until it meets the state border of the U.S.S.R. Kazakhstan is bounded on the east by the Chinese People's Republic. Its southern border runs along the peaks and foothills of the Tien-Shan Mountains and afterwards through the Central Asian desert all the way to the Caspian Sea. Kazakhstan's southern neighbours are the Central Asian republics of Kirghizia, Uzbekistan and Turkmenia.

Kazakhstan's territory is intersected by main railways and airlines which link the Central Asian republics with Moscow, the Urals, Siberia and other parts of the R.S.F.S.R., and also by the communication lines linking the central areas of the U.S.S.R. with China.

In tsarist times Kazakhstan was a backward and impoverished outlying region of Russia, inhabited by nomad cattle-breeders.

During the years of Soviet power it has developed into a leading socialist republic with

LOCATION OF KAZAKHSTAN



modern industry and mechanized multi-branch agriculture

How did this transformation come about? What is the Kazakhstan of today? What are its natural conditions, population, economy and level of culture? In the following pages we shall endeavour to tell our readers about these things.

NATURAL CONDITIONS AND NATURAL WEALTH

Upon first visiting Kazakhstan the traveller gazes in wonder and astonishment at the boundless expanse of plain and desert. As far as the eye can see there are vast treeless plains, at times absolutely flat and monotonous and at times slightly undulating or dotted with sandy hummocks. Fairly level uplands, with occasional hillocks, hills and at times minor mountain ranges, extend for hundreds of miles in the central and north-eastern regions of the republic.

Approximately one-third of the territory of Kazakhstan is about 1,000 feet above sea level, and about half from 1,000 to 1,600 feet.

Lofty mountains, covered with glaciers, are found in the south-eastern marches.

The vastness of the expanses, unbroken by mountain ranges, determines the immensity of the landscape zones which extend thousands of miles laterally and hundreds of miles meridionally. The opportunities here for crop-raising and stock-breeding are unlimited. When the campaign was launched to bring the virgin land of the Kazakh steppes under cultivation, it was discovered that within two or three years it would be possible to plough up something like 50 million acres—more than the total crop area of such countries as France or Italy and only slightly less than the crop area of Argentina. So vast are Kazakhstan's pastures that tens of millions of cattle could find ample grazing there.

However, the relief of the Kazakh republic is far from being as monotonous as it might seem at first glance.

Let us take a closer look at it.

The west of the republic is taken up with the Caspian Lowlands which slope gradually from north to south and from east to west—towards the Caspian Sea. A considerable stretch of these lowlands lies below sea level. The Caspian itself is nearly 100 feet below the level of the ocean, and in the coastal belt there are

places much lower. The Karagie Depression, located south-east of Fort Shevchenko, is 434 feet below the level of the ocean.

The southern spur of the Urals Range—Mugodzhar Hills—runs in a southerly direction to the east of the Caspian Lowlands.

The Ust-Uri Plateau, waterless and practically uninhabited, lies between the Caspian and Aral seas.

The Turgai Tableland, which extends eastward from the Urals, is intersected by the narrow, low-lying Turgai Valley. At its southern extremity this valley opens out and merges with the Turan Lowlands which slope in the direction of the Aral Sea and are largely covered with sand. On the north the Turgai Valley joins the West-Siberian Lowlands, the southern part of which is part of Kazakhstan. Running along the valley of the Irtysh, these lowlands extend all the way to Semipalatinsk. They are remarkable for their flatness, although sloping gently towards the north.

South of the West-Siberian Lowlands, in Central Kazakhstan, are the so-called Low Hills—an extensive elevation with peculiar structure and contours. The hills are the remains of an ancient mountain country desiccated

ed by wind and weather. The Low Hills form a tableland perforated with occasional hummocks and hills separated by plains, small valleys and depressions. Occasional hills rise to 2,000 feet and upwards. In the south the Low Hills merge with the clayey Bet-Pak Dala Plateau (650-2,300 feet).

The Tien-Shan and the Altai mountain systems rise in the southern and eastern outskirts of the republic.

The highest ranges of the Tien-Shan system are Zailiisky Alatau and Dzhungarsky Alatau.* Mount Talgar in the Zailiisky Alatau Range has an altitude of 16,723 feet, Mount Tishkan in the Dzhungarsky Alatau—16,886 feet—both higher than Mount Blanc. The main glaciers in Kazakhstan are found in these ranges. The snow-line in the Dzhungarsky Alatau is reached at a height of 11,000 feet, in the Zailiisky Alatau at 12,000. The alpine and subalpine meadows below the snow-line are used as summer pastures. Still lower, at 9,000 feet, comes a belt of thin woods.

* The name "Alatau" derives from mountains covered with glaciers and eternal snow because of the effect of glistening glaciers and snow against black cliffs

The Karatau^{*} Range, the most westerly of the Tien-Shan system within the borders of Kazakhstan, is much lower (maximum altitude 7,137 feet—Mount Minzhilki) and much smoother; its slopes are treeless.

Between the Tien-Shan and Altai systems is the Tarbagatai Range—altitude up to 10,000 feet. Neither glacier nor tree belt is encountered on Tarbagatai.

With the borders of Kazakhstan the mountains of the Altai Range are lower than the Tien-Shan peaks, but owing to their more northerly location the climate here is much colder. The greatest altitude in the Altai Range in Eastern Kazakhstan is met in the area of Mount Belukha—over 15,000 feet. The southwestern ranges of the Altai system are rich in non-ferrous ores and for this reason are known as the "Rudny Altai." The slopes here, to a height of 6,500 feet, are covered with trees—mostly larch; above the wooded zone there are subalpine and alpine meadows. The snow-line is reached at 7,500-8,000 feet.

The mountains in Eastern Kazakhstan, on the Chinese border, form an almost continuous

* Karatau—the Black Hills—as distinct from Alatau, means the mountains without glaciers.

wall with occasional gaps which give outlet from Kazakhstan to Sinkiang. Of these the most important is the Dzhungarskiye Gates, located between the Dzhungarsky Alatau and the Barlik Range (on the territory of China). In early times and in the Middle Ages the nomad tribes drove their herds through this gap from Central Asia into Kazakhstan and Eastern Europe.

The Kazakh highlands with their valuable summer pastures are of great importance for stock-breeding. As condensers of moisture they also play a very important role. There is considerable rainfall in the hills and in summer the glaciers begin to melt, forming numerous streams and rivers which bring life-giving moisture to the fields and orchards in the foothills and to the desert oases. Subterraneous waters also have their sources in the hills. The Tien-Shan Range in particular plays a very important role in irrigated agriculture in the south of the republic.

The territory of Kazakhstan has a complex geological history, especially its central and eastern areas. From earliest times the earth's crust has been most unsettled in these parts—now rising to form vast mountain systems, now sinking below the level of the ocean to become

a sea bed The mountain making processes were accompanied by internal convulsions, formation of deep clefts and eruption of molten masses—the end result being the numerous deposits of non-ferrous and rare metals.

The ancient mountain system in the central part of the republic, now known as the Low Hills, bears all the hall-marks of age-long buffeting of wind and weather and the inroads of time. As a result, the very oldest strata are often found at the surface or under a thin crust of later formation. This makes it much easier to discover and explore the ore deposits.

In the eastern and south-eastern regions the process of mountain formation continues to this day. Earthquakes are frequent, the most severe tremors being recorded in the Alma-Ata region.

The south-western marches have not been subjected to this intensive mountain-forming process. But here, too, over numerous geological epochs, convulsions have taken place resulting at times in subsidence of some areas and elevation of others.

The vast expanse of its territory and the peculiarities of its geological history explain why Kazakhstan is so rich in valuable ores. The biggest copper deposits in the U.S.S.R. are

found in Central Kazakhstan. The complex ores of the Altai region are among the largest in the world. They contain lead, zinc, copper, gold, silver, platinum, cadmium, molybdenum, bismuth and other metals. Deposits of these ores are found also in the Dzhungarsky Alatau and in the Karatau Range. The republic holds first place in the Soviet Union for deposits of copper, lead, zinc and silver.

Recent surveys have shown that Kazakhstan is extremely rich in bauxites, especially in the Turgai area. Gold is found in the Altai and other areas.

It occupies a leading place among the republics of the Soviet Union for deposits of iron ore, located chiefly in the Kustanai and Karaganda regions.

The republic holds first place in the world for deposits of high-quality chrome (Aktyubinsk region) and vanadium (in the Karatau Range). Titanium deposits have also been discovered recently.

There are extensive coal basins in the central and northern areas.

The Ural-Emba oil-fields are located in the Caspian Lowlands.

High-quality phosphorites are found in the Karatau Range and in the Kokchetav region.

Salts are abundant, including rich deposits of domestic salt, potassium, magnesium and other mineral salts. Common salt is found in vast quantities in the vicinity of the Aral Sea, near the Caspian, in the Pavlodar salt lakes and in numerous other places. In the Caspian Lowlands some of the borings have reached a depth of one and a half miles without exhausting the salt seam.

Sulphate lakes are found at Balkhash, the Aral Sea and in other areas.

Before the October Revolution the natural wealth of Kazakhstan was only slightly known. Its geological structure had been poorly studied. It suffices to say that a mere six per cent of the territory had been charted geologically. Discovery of the non-ferrous ores, coal and oil was, in most cases, purely accidental. As a rule, the known deposits were those which lay close to the surface.

With the advent of the Soviet rule exploration and investigation of useful minerals were put on a scientific footing. Leading geologists such as A. Arkhangelsky, K. Satpayev, A. Gapeyev, N. Kassin, M. Rusakov, V. Nekhoroshev, M. Prigorovsky were among those who took part in the survey work.



The Kara-Kum sands in the vicinity of the Aral Sea

Winter in the Zailiisky-Alatau Mountains





Hundreds of expeditions explored the country. Practically the entire territory of the republic has been charted on geological maps. Modern geophysical methods used in tapping the ores led to the discovery of many new and valuable deposits.

Kazakhstan's climate is determined by its continental location and its remoteness from the Atlantic and Pacific oceans; high mountain ranges wall it off from the Indian Ocean. Along a broad belt, extending through Western, Central and Southern Kazakhstan—from the Caspian Sea through the vicinity of the Aral Sea and eastwards from Lake Balkhash—annual rainfall ranges from 100 to 150 millimetres, and in other places is even less than 100. The influence of the Caspian and Aral seas and other reservoirs is very slight in this respect. To the north, the rainfall rises to 200-350 millimetres. For other countries, located at higher latitudes, where evaporation is less, such precipitation would suffice for raising stable crops without resort to artificial watering or irrigation. But in Kazakhstan, the southern areas of which are on the same latitude as Northern Spain and Central Italy, evaporation is above the average, all the more so because of predominantly cloudless skies.

Precipitation declines from north to south (with the exception of the mountain areas), and at the same time the temperature of the air and intensity of evaporation rise proportionately. As a result, a large part of the republic suffers from lack of moisture, which explains the formation of deserts in the central and southern areas.

Strong winds, typical of Kazakhstan with its flat and treeless relief, accentuate the drying up of the land.

Non-irrigated agriculture is possible only in the northern belt and in the foothills in the south. The vast expanses in the western, central and southern areas of the republic are fit only for pasturing cattle, and not all of them either, since water is exceedingly scarce. Even in the northern steppe belt, which is suitable for non-irrigated cultivation and which is the granary of Kazakhstan, weather conditions are not always favourable. In some years drought at the end of spring and beginning of summer causes crop failure. On the other hand, every rainy day during this season means a tremendous increase in the grain harvest. The foothills of the Altai and Tien-Shan ranges are, as a rule, the only places not affected by drought. Annual precipitation here is in the

region of 500-600 millimetres, and in some places 1,000 millimetres.

A feature of the climate is the pronounced seasonal variation in temperature, rapid switch from summer to winter and vice versa, and also sharp changes in temperature in the space of a day. The swift change from one season to another necessitates an exceedingly high rate of spring field work and in gathering the harvest. A delay of a few days in sowing or harvesting can cause grave damage.

Absence of mountains in the north and in the central regions, and also in the areas to the north of the Kazakh republic, gives free access to the masses of cold air formed in the Arctic and in Siberia. This makes the climate colder and dryer than it would be in these latitudes given a different relief. The winter is particularly severe in the north and north-east where the average temperature in January-February is $17-18^{\circ}\text{C}$. below zero, with the mercury falling at times to as low as -58°C . Masses of cold air penetrate also to the southern areas but are heated up somewhat on the way. In the south the temperature never falls below -30°C ., but for other countries on the same latitude such temperatures are rare. On the other hand, when masses of warm air reach

Southern Kazakhstan from Iran, the temperature often rises to 20°C. above. As they travel northward the warm masses cool off.

In the south and south-west the snow is thin and unstable with the result that cattle can graze in these areas during the winter months. Snow-storms and blizzards are frequent occurrences in the central and northern parts, especially towards the end of November and December. They happen in the north-east even in March.

Invasions of cold air occur in spring, leading to a sharp fall in temperature which causes occasional damage to the orchards in the south.

Summer throughout the entire territory of the republic is hot—the average July temperature varying from 20 to 28°C. Abundant sunshine allows the cultivation in Southern Kazakhstan of such heat-loving plants as cotton, rice and grapes and, of course, sugar-beet and tobacco. Cloudless skies are a feature of the summer months. Exceedingly high temperatures are recorded in the desert zone in the south where “dry rain” can be seen in summer, that is, rain drops evaporating in the hot dry air before they reach the ground.

Climatic features, relief and geographical situation determine the nature of Kazakhstan's

waterways. Rivers are few. The biggest of them—the Irtysh, Syr-Darya and the Ural—rise in the neighbouring mountain areas and have very few tributaries on the territory of the republic. Most of the rivers originating in the republic are small and their flow fickle, making them unreliable either for irrigation or for supplying drinking water to the towns. Sometimes, for example, in a number of areas in Central and Western Kazakhstan, there is no surface flow at all—the water is either absorbed by the soil or evaporates. After the spring floods, which continue for about 10-20 days, some rivers either dry up completely or form a chain of dispersed pools, while others peter out in the desert and steppe or end up as marshes and swamps. The Emba, for instance, a fairly large river, fails to reach the Caspian Sea. The Ural, Ishim, Tobol, Nura and Ilek have their greatest flow in spring. During the summer months their volume declines sharply. Snow water constitutes from 70 to 90 per cent of the annual flow of the Ural; 82 per cent of the Nura's flow takes place in April, and only 10 per cent in May; in the Akmolinsk area the April-May flow of the Ishim accounts for 93 per cent of the annual flow.

The Syr-Darya and Ili, together with a num-

ber of tributaries, have a more rhythmic flow, being fed chiefly by summer rains, melting glaciers, snow and the underground waters of the mountain areas. They carry a considerable volume during the summer months with a consequent favourable effect on agriculture.

Some of the rivers are important sources of electrical power. Although hydroelectric resources per square mile of territory are three times less than the average for the Soviet Union, over-all hydroelectric resources, utilization of which is technically possible, amount to 60,000 million kilowatt-hours a year. The main hydroelectric wealth is concentrated in the mountainous districts. The greatest reserves are found in the Irtysh and its tributaries, which flow from the Altai Mountains. Big stations are being built on the Irtysh. The Ili possesses immense hydroelectric resources and a major power unit will shortly be built on it. The Syr-Darya, too, is being harnessed.

Only the northern and north-eastern areas of Kazakhstan (approximately one quarter of its territory) belong to an ocean basin. The rivers here are part of the Irtysh system and take their waters, via the River Ob, to the Arctic Ocean. The remainder of the territory is linked with inland basins. Of these the big-

gest are the basins of the Caspian and Aral seas* and Lake Balkhash. Lakes in Kazakhstan are numbered by the thousand.

The Caspian Sea, the biggest lake in the world, is steadily becoming shallower—the level has dropped seven feet in recent decades. The sea has retreated, and the shallower parts have dried up. The configuration of its shore has changed greatly. Since the shallowing process is most marked in the north-east, adjoining the territory of Kazakhstan, it is here that the greatest changes have taken place in the shore-line. The former bays, Kaidak and Kom-somolets, are now salt marshes. Depth in the shore-adjointing parts is unstable on account of the winds—when the winds blow landward the water is swept on to the coastal belt, and when they blow from land the bed is laid bare over large areas. The shallowing of the Caspian is causing great loss to the fishing industry and to sea communications. Coastal towns and settlements are the chief sufferers, being left far inland as a result of the drying up.

The salt content of the Caspian water is two and a half times less than that of the oceans.

* Because of their size the vast Aral and Caspian lakes are known as "seas"

The Aral Sea* (excluding the islands) has an area of 24,681 sq. miles. Its average depth is 54 feet. Its salt content is three times less than that of the oceans.

The Caspian and Aral seas, and lakes Balhash and Zaisan abound in fish and are the main fishery areas of the Kazakh republic. The numerous salt lakes contain vast resources of the common salt, Glauber salts and soda.

Climatic conditions exert a strong influence on soil and plant formation. The entire territory of Kazakhstan, excluding the mountain areas with their vertical divisions, can be divided into 4 natural zones extending laterally.

The most northerly part of Kazakhstan (Petropavlovsk region) is located in the black-earth and forest-steppe zone. Annual precipitation here ranges from 300 to 400 millimetres. In the lowland areas there are small belts of birch and aspen, and in the sandy areas—pine woods. Wooded steppe in the territory of Kazakhstan covers only a small area.

The treeless steppe zone, the southern borders of which pass through Uralsk, Aktyubinsk, Karsakpai and Semipalatinsk, is much greater. The northern part of this belt with its black-

* "Aral" in Kazakh language means "island" There are many islands in the Aral Sea, hence its name.

earth soil is covered with feather grass. The southern part—dry steppe—has chestnut soil with feather grass and fescue. Precipitation here varies from 250 to 350 millimetres a year. In some places, with sandy soil and low hills, there are pine woods.

Then comes the desert-steppe zone, the southern fringes of which skirt the northern shores of the Aral Sea and Lake Balkhash. Annual precipitation here does not exceed 200-250 millimetres. Typical plants in this zone, with its light chestnut and brown soils, are wormwood and saltwort. There are numerous salt marshes.

Farther to the south extends a vast zone of clay and sandy desert where the annual precipitation ranges from 150 to 200 and sometimes is only 100 millimetres and less a year. The soil here is grey, and salt marshes are plentiful. Plant life is confined to wormwood, saltwort and ephemera

The largest of the clay-salt-marsh deserts—Bet-Pak Dala*—is situated between the River

* *Bet-Pak Dala* means the "crafty, shameless steppe" Bet-Pak Dala was formerly known as the "hungry steppe" The south-eastern part of the Kyzyl-Kum Desert lying on the borders of Uzbekistan and Kazakhstan also bears the same name The two "hungry steppes" should not be confused

Sary-Su on the west and Lake Balkhash on the east; on the south it extends to the River Chu. Bet-Pak Dala embraces an area of 57,900 sq. miles. Hardly any rivers, not even seasonal ones, are found on this territory. Its eastern areas are rocky.

More than half the territory of Kazakhstan is desert and desert-steppe zones.

In the desert zone, where fresh water is a problem, the subterranean waters are fairly close to the surface. The sandy areas are used as a rule for winter grazing. The main sand massifs in Kazakhstan are the Sary-Ishyk-Otrau, Muyun Kum and Kyzyl-Kum.

Loess plains of exceedingly fertile soil are found in the south-east of the republic, in the foothills of the Tien-Shan, where there is a comparatively narrow crop-raising belt watered by mountain streams. Another cultivated area, wedging right into the desert, runs along the Syr-Darya River.

Pastures and meadowlands take up about two-thirds of the entire territory of the Kazakh republic. Such vast pastures are not found anywhere else in the Soviet Union. The pastures, however, have a sharply-expressed seasonal character. They can be used only at

certain times of the year: some in summer, others in winter, in autumn or in spring.

The deserts and semi-deserts, lifeless in the sultry heat of summer, are covered with succulent grasses and flowers for a brief period in spring when they become excellent grazing grounds. With the onset of summer the green carpet withers and burns up. All that remains is the hardy desert plants adapted to the heat and absence of moisture. These plants are not edible for the herds. Only in isolated sandy massifs is it possible to graze the cattle in this season. On the other hand, the luxuriant mountain meadows bloom in summer, and the steppe of the northern belt is covered with lush grass. It is then that the herds are driven to the summer pastures known as *djailiau*

The best summer pastures are those in the mountains. The area of mountain meadows is in excess of 25,000,000 acres. Also famous for its summer grazing is the Sary-Arka steppe which lies between the Bet-Pak Dala Desert in the south and the Kokchetav Hills in the north; on the east it is bounded by the River Irtysh and on the west by the Ulutau Hills. Sary-Arka is well supplied with fresh water. The grass covering is distinguished by its variety and retains its feeding qualities throughout the sum-

mer. The herds graze here from spring until late autumn. In winter, however, owing to the frost and snow, prepared fodder is necessary.

The best winter pastures are located in the sandy areas of the southern part of the republic and especially along the rivers Syr-Darya, Ili and Chu.

Kazakhstan is not so rich in forests. Major wooded lands, with timber suitable for industrial purposes, are found only in the east, in the Altai Mountains. In the south the slopes of the Tien-Shan Range are thinly wooded, mostly with fir and juniper. The saksaul, a desert tree, grows to a height of 25 feet. Its trunks and branches are twisted in the most fantastic way. The branches are covered with small, scale-like leaves that afford no shade. The wood of the saksaul is so solid that it sinks in water. It is widely used as fuel; it burns excellently, gives out much heat and is useful for making charcoal. Thousands of acres in the Kazakhstan deserts are sown to saksaul every year.

* * *

The vast and varied natural wealth of Kazakhstan provides the basis for thriving industry, agriculture and animal husbandry. However, exploitation of a large part of this wealth

is hindered by the rigorous natural conditions. In the past many areas in Kazakhstan were regarded as hopeless from the economic point of view owing to shortage of water, lack of roads, absence of timber, killing heat of summer and severe cold of winter and salinity of soil.

It was only after the Great October Socialist Revolution that a real offensive against nature began in Kazakhstan.

KAZAKHSTAN BEFORE THE GREAT OCTOBER REVOLUTION

In olden times, before our era, the territory of present-day Kazakhstan was inhabited by nomad tribes of cattle-breeders, while crop-raising was practised in a small way in the southern areas. For thousands of years the primitive agriculture slowly developed and people adapted themselves to the severe natural conditions.

Nomad stock-raising—primarily sheep—was based on round-the-year grazing on seasonal pastures without prepared fodder. The insignificant snowfall in the areas of the winter grazing made it possible to pasture the flocks

all through the winter months. As a rule, horses were sent ahead to clear the snow with their hooves so that the sheep coming after them could feed on the uncovered grass. The radius of the seasonal pasturing ranged from 100-200 to 450-550 miles.

Centuries of experience taught the Kazakh cattle-breeders all there was to know about the steppe and desert, acquainted them with the plant life and the seasonal changes in the quality of the grass. But it was difficult for the nomads to combat the formidable forces of nature. Sometimes, owing to drought, the grass on the summer pastures was burnt out, or heavy snowfalls happened in winter. But worst of all was the sudden freezing of the pastures which followed the thaws, when the ice covering meant starvation and death for the flocks. In Kazakh language this catastrophe was known as the *djoot*. Severe *djoots* decimated flocks and herds, depriving the people of means of subsistence. During the good years the stock was gradually renewed until the next *djoot* came along. And so generation after generation waged a struggle against the caprices of nature, which all too often confronted the nomad with the threat of starvation.

The Kazakh tribes practised a natural economy. Most of the things needed for life, with the exception of metal objects, were prepared by themselves. An aul—a small group of nomad households joined together or a few kindred auls formed an exclusive self-supporting unit with little or no contact with the outside world.

Livestock supplied the nomads not only with meat and milk products, but also with the main materials needed for household use. One is astonished by the variety of uses to which these materials were put in the life of the nomad Kazakhs.

Camel hair and wool were spun and woven into coarse fabrics for clothing, sacks and travelling bags. Wool was also used to make the yurtas or tents in which the nomads lived. The tops and sides of the tents were covered with felt matting which kept them warm in winter and cool in summer. The matting, brightened with ornamental work, also provided the main furnishing of the tent. It was used to cover the floor and served as "table-cloth" and blanket. An all-purpose material, it was used as packs for camels, in making footwear, headwear, etc.

Ropes were made from goat hair and horse hair. Wool and camel hair were used for mak-

ing thread, belly-bands and bridles. Carpet-making was a widespread industry. Hides were used for making shoes, harness, gourds—a useful item of nomad life—and other utensils. Sheepskins were used for overcoats, trousers and hats.

Carding and spinning of wool, weaving, felt processing, rope-twisting and making clothes—all were the tasks of the Kazakh women. Domestic implements were of the most primitive kind and everything was done by hand.

The social system was extremely backward. Patriarchal-feudal relations prevailed. The nomad tribes and clans (*usuns*, *kipchaks*, *naimans*, *kereis*, *dulats* and others) were always fighting among themselves and with other tribes. Wars and raids often disturbed the peace of the Kazakh steppe.

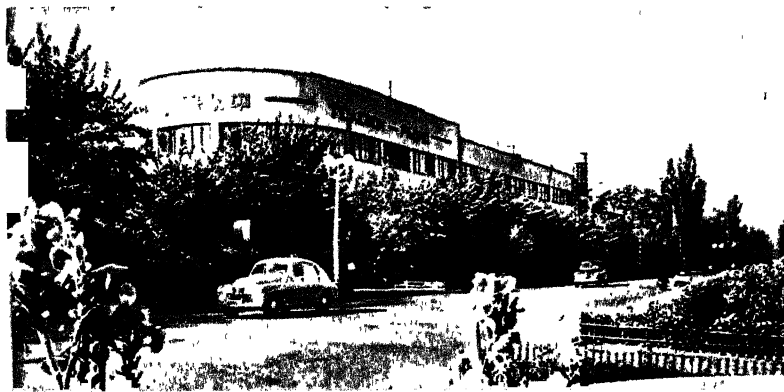
There was no such thing as a unified and stable Kazakh state. In the XVIth century the clans united into three *juzes* (hordes), each with its own district. The *juz* was headed by a khan who had subordinate sultans. The latter headed the clan or group of clans.

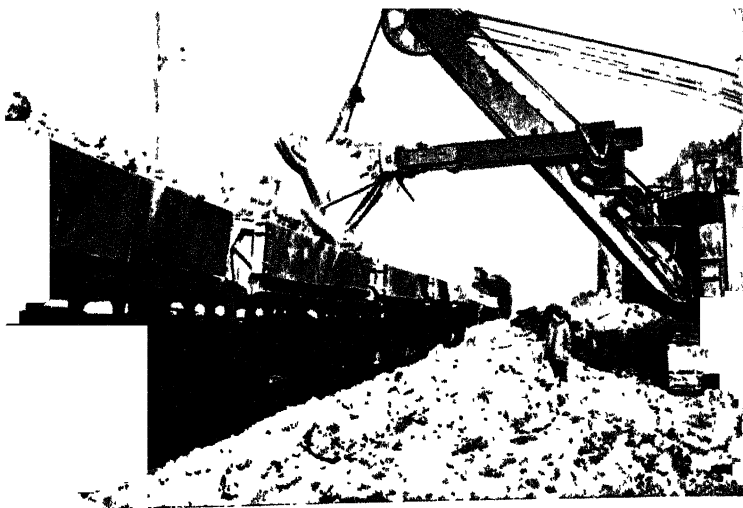
The *juz*, being an unstable and weakly centralized combination, could not stand up to a powerful adversary. The greater part of territory of the Elder Juz was seized by the



A summer evening on the mountain pastures

Central Telegraph Office in Alma-Ata, a capital of
Kazakhstan





Open-cast coal seams in Karaganda. Excavators uncover the coal and load it on to the railway wagons

The Kostenko Coal Pit in Karaganda

Kokand khanate. In the 20's and 40's of the XVIIIth century the Kazakhs suffered from terrible invasions by the warlike Djungars who came from the east. The invaders deprived the Kazakhs of their herds, slaughtered many and took the survivors into slavery. Many died of starvation. Among the people these invasions were known as the "Great Evil."

The first steps taken to unite Kazakhstan with Russia date from the 30's of the XVIIIth century. Khan Abulkhair, chief of the Junior Juz, submitted a request for citizenship to the tsarist government with a view to getting Russia's help against the Djungars. The chiefs of the *juzes* pledged allegiance to Russia. Later, the southern part of Kazakhstan was incorporated into Russia. The Chimkent area, which aligned itself with Russia in 1865, was the last to do so.

Unification with Russia created new conditions for development. An end was put to the tyranny of the Khiva and Kokand khans in the main winter pastures, the seasonal pastures were combined into an annual cycle within the territory of the unified Russian state, the dominion of the khans was abolished, the arbitrary rule of the feudal beys restricted and the bloody internecine wars ended, all of which

facilitated the development of trade and normal economic life on the territory of Kazakhstan.

Unification with Russia marked the beginning of the end of the stagnation and isolation of the Kazakh tribes who were an entire historical epoch behind Russia. Economic links with Russia, which had developed long before the unification, were now greatly extended. Slowly, capitalist relations began to develop. The first towns made their appearance and industrial enterprises sprang up. Russian settlers began to cultivate the steppes.

Settlement of the expanses of Kazakhstan, chiefly by Russians and Ukrainians, dates from the XVIth century when Cossacks* first appeared on the right bank of the River Ural. Later, Orenburg and Siberian Cossacks began to settle in Northern Kazakhstan. Settlement of the right bank of the Irtysh began in the first quarter of the XVIIIth century. In the 20's of the XIXth century, Russian settlements appeared in what are now the Kokchetav and Karaganda regions. During the second half of the XIXth century Cossacks penetrated to the

* Cossacks should not be confused with Kazakhs. The Cossacks were a military estate in tsarist Russia.

lower reaches of the Syr-Darya and South-Eastern Kazakhstan where they formed the Semirechye Cossack troops.

Thereafter Kazakhstan became one of the main settlement areas for peasants from the southern gubernias of European Russia. The stream of settlers increased after 1905. Northern Kazakhstan was transformed into a crop-raising area. Several million acres of virgin land were turned into fields of wheat and millet by the labour of Russian and Ukrainian peasants.

And so before the Revolution the various parts of Kazakhstan differed economically. The central, western and southern areas remained as before regions of backward nomad and semi-nomad cattle-breeding where tribes lived in conditions of medieval patriarchal-feudal relations, with a primitive semi-natural economy. The Russian-Ukrainian agricultural areas in the northern belt and in the southern marches were on a much higher economic level. This combination and interrelation of areas at different levels of economic development were a feature of pre-revolutionary Kazakhstan.

The arrival of Russian and Ukrainian farmers exerted a powerful influence on the local

population. The Kazakh peasants took over from the settlers their methods of cultivation and began to use their implements. The adoption of the scythe by the Kazakhs was of great importance since it enabled them to cut the grass and make hay for the winter. In some places the nomads and semi-nomads turned to a settled mode of existence. Mowing machines made their appearance on the big estates owned by the beys.

Following the example of the Russian and Ukrainian settlers, the local people took to rearing beef and dairy cattle, a form of husbandry only poorly developed in the past since these animals were not adapted to securing grass feed from beneath the snow.

Conditions of the working people after unification with Russia remained at a very low level. Right until the October Revolution the Kazakhs suffered from a two-fold oppression: on the one hand, Russian tsarism, Russian landlords, Russian and foreign capitalists, and on the other, the local beys, owners of larger flocks and herds. The masses of poor peasants were forced to hire themselves out to the feudal beys and kulaks for paltry wages and sometimes for a miserable payment in kind. Exploitation of the peasant poor by their kinsmen

was concealed by the relics of patriarchal relations.

Abai Kunanbayev, the Kazakh poet-democrat, described the poverty of his countrymen in these words:

The bai has many shepherds
And his tent is very fine;
The poor man freezes in the steppe
While gaurding rich men's kine.
He tans the hides in icy tubs,
His hands are cold and numb;
At home his wife spins yarn, poor
soul,
And counts each sorry crumb.
No fire to warm their little child,
Nor felt the roof to patch,
Though all the warmth there ever is
Goes out through the torn thatch.

By degrees, Kazakhstan began to be drawn into the Russian market and became a colony of the tsars. It was adapted to the economy of the central areas of Russia as a raw material appendage.

In exchange for Russian manufactures and agricultural products, Kazakhstan supplied live

cattle, wool, camel hair, hides, sheepskins and mutton fat. Some of these items found their way to markets in Western Europe.

At that time the local industry was represented chiefly by cottage crafts—workshops processing animal husbandry and agricultural products (wool-washing, tallow-melting, tanning, flour-milling, tobacco-processing, cotton-cleaning and wine-making) and making semi-finished goods. The latter were sent to European Russia for processing.

Gold, non-ferrous metals and salt were extracted in small quantities. Coal was mined in a small way in the primitive mines in Eki-bastuz and Karaganda. The first oil wells were sunk in the Emba area shortly before the First World War.

Chief place, however, was held by food industry, a good half of which consisted of distilleries and breweries, branches which gave more production than the whole of Kazakhstan's heavy industry.

Manufacturing industry was but in its infancy before the Revolution. Kazakhstan imported goods (sugar, leather and textiles) which could have been made locally.

The considerable local fuel and power resources remained practically unused. Even in

the non-ferrous metallurgy, shrubs, weeds and cattle-dung were used as fuel.

The first mining enterprises on the territory of Kazakhstan were opened by the Russian merchants Popov, Ushakov, Ryazanov, Pervushin, Derov and Demidov.

At the end of the XIXth century and at the beginning of the XXth foreign capital began to penetrate into the mining industry. The rich deposits attracted the attention of German, British, French and American capitalists.

In 1896 French capital received its first concession in the Rudny Altai to exploit the Zyryanov complex ores. At the beginning of the XXth century the Spassky copper-smelting plant, together with the Uspensky copper ore deposits and Karaganda coal mines, was granted as a concession to the French capitalist Carnot, who afterwards sold out to the Spassky Copper Ore Company controlled by British capital. The Atbasar Company, chiefly American capital, exploited the Dzhezkazgan copper deposits. In 1914 the Ridder ore and the Ekibastuz coal were taken over by the Russian-Asian Corporation—a British firm. Another British company—Russian Mining Corp.—began to exploit the Zyryanov, Belousov and other deposits in the Rudny Altai. Foreign cap-

ital also held strong positions in the Emba oil industry.

Thus, prior to the First World War practically all the more important deposits were in the hands of foreign capital, mainly British.

Foreign capital did little to improve Kazakhstan's industry. The technical level of the enterprises was low. The natural resources were but poorly explored and the known deposits ruthlessly exploited. Suffice it to say that the coal deposits, which according to latest data amount to tens of billions of tons, were estimated at the XIIth International Geological Congress in 1913 at a mere 100 million tons.

One of the reasons for the tardy industrial development was the absence of an adequate transport system. In the year 1913, there were but half a mile of railway for every thousand square miles of territory. The vast expanse lying between the Orenburg-Tashkent Railway and the Russo-Chinese border had no rail communications whatever. Before the Revolution 19 of Kazakhstan's 28 towns were not connected by railway. Goods were transported chiefly by caravans of camels and carts. Camels were even used in taking coal to some of the factories.

Road transport was practically unknown in pre-revolutionary days. Transportation of heavy equipment for hundreds of miles, using animals, was a difficult and, at times, an insoluble task. When the Karsakpai copper-smelting plant was being built, the equipment was transported by means of a "nomad" railway line eight and a half miles long, put down specially for this purpose. After the trains passed with equipment, the rails were taken up and laid down once again in front of them so that gradually this "caravan," as it was humorously called, moved ahead. It took almost three years to transport the equipment a distance of 200 miles.

The rise of manufacturing industry was accompanied by the appearance of an industrial proletariat. During the second half of the XIXth century, with the development of commodity production and the accelerated impoverishment of the poorer part of the Kazakh population, a reserve of labour was created in the auls. The existence of masses of Kazakh poor, crushed by poverty and feudal extortion, gave the capitalists unlimited opportunities for merciless exploitation. There were no factory inspectors in this part of the world and no control whatever over the employers, whether

Russian or foreign. Labour conditions here were much worse than in European Russia.

Kazakh workers remained in the factories only for part of the year, chiefly during spring and summer when the nomads encamped on the northern pastures where most of the factories, ore mines and gold-fields were located. This explains why a permanent population did not grow up around the industries. During winter months work in the ore mines and gold-fields frequently came to a standstill.

The slight development of industry in pre-revolutionary Kazakhstan did not change the general picture of the economic and cultural life which, as before, remained exceedingly backward. Ninety-eight per cent of the population could neither read nor write. Hang-overs of medievalism prevailed in social relations in the auls. It was left to the Great October Socialist Revolution to launch an offensive against this ignorance and backwardness.

KAZAKHSTAN DURING THE YEARS OF SOVIET RULE

The Great October Socialist Revolution proclaimed the equality of all the nations of Russia, abolished the national privileges enjoyed

by some nations and the discrimination and oppression, suffered by others. The chains which had held the Kazakhs in the "prison of the peoples," as tsarist Russia was known, were broken. Soviet power granted all the nations the right to self-determination all the way to secession. The Kazakh people, however, did not exercise their right to secede from Russia. Closely linked with Russia economically, Kazakhstan could develop economically, politically and culturally only in the fraternal family of Soviet peoples.

Already during the Civil War, V. I. Lenin, head of the Soviet state, meeting the wishes of the Kazakh people, posed the question of forming a Kazakh state. In 1918 the Peoples' Commissariat for Nationalities set up a special department to carry out the necessary preparations for forming the republic. In January 1920 a conference of Kazakh Party and Soviet officials met in Aktyubinsk and decided to unite the regions of Kazakhstan into an autonomous republic. The decree on the creation of the Kirghiz* Autonomous Soviet Socialist Re-

* Under tsarism, the Kazakhs were known under the wrong name of "Kirghiz." This name was carried over and used during the first years of Soviet power. In

public, as a component of the Russian Federation, was signed on August 26, 1920. Incorporation into the R.S.F.S.R. answered the wishes of the Kazakh people who sought to maintain close contact with the Russian people and to get their help in the economic, cultural and administrative development of their republic.

The inaugural All-Kirghiz Congress of Soviets was convened on October 4, 1920. At first only the northern part of Kazakhstan was included in the territory of the new republic—the southern part joined the multi-national Turkestan Autonomous Republic. Later, in 1924, when Turkestan was divided into a number of national republics, the areas with a Kazakh population were brought into the K.A.S.S.R.

The first capital chosen for the new republic was the town of Orenburg to which a large part of the territory of the republic was attracted economically. Afterwards the capital was transferred to the town of Kzyl-Orda. In 1929 Alma-Ata, which by this time

1925 the Vth Congress of Soviets in Kazakhstan restored the historically correct name of the nation and republic. In the Soviet Union the name "Kirghiz" belongs to another nation having its own republic in Central Asia

had been linked up with the Turkestan-Siberian railway, became the capital.

Kazakhstan was confronted with the task of overcoming the age-old backwardness and of catching up with leading areas of the country in the shortest possible space of time. At first glance the task seemed an impossible one. The republic had inherited a grim legacy from the past. Its economy lay in ruins as a result of the First World War and the Civil War which followed the Revolution. It was visited with a severe calamity in 1920 and 1921 when a devastating *djoot* destroyed most of the livestock. This disaster was followed by failure of the grain crop with resultant famine in the western and northern areas of the republic. Industry came to a standstill. Gradually, and with great difficulty, the economy of the young republic was restored. The herds increased, the crop area was extended and industry revived. The first tractors made their appearance on the fields of Kazakhstan in the early 1920's. Work was begun on the first big industrial projects in 1925. Of these the biggest were the Karsakpai copper works in Central Kazakhstan and the Ridder (now Leninogorsk) complex metals plant in Altai. The first Kazakh miners and metal workers were trained in these works.

With the launching of the First Five-Year Plan (1928-32) Kazakhstan's industry expanded rapidly. The first shafts were sunk in the Karaganda coal basin and construction of the Balkhash copper-smelting plant, the Chimkent lead works, the Aktyubinsk chemical plant, the Guryev fish-cannery, the Semipalatinsk meat-packing factory and of many other giants of heavy and light industry was begun. This expansion continued into the subsequent years. By 1941 the over-all coal output had increased 94 times compared with 1913, the output of non-ferrous metallurgy—23 times, the chemical industry—97 times, metal processing—168 times.

The creation of new centres of industry was beset with difficulties. Many difficulties had to be overcome and in the first place the problem of fresh water supply, the problem of transport and the settling of uninhabited territories. Actually the creation of industrial centres meant the opening up of new areas. The new localities had to be settled and factory construction accompanied by the building of schools, houses, hospitals, power stations, suburban vegetable farms, railways and highways. Many of these places had no water supply and a great deal of work had to be put

into investigation of water resources, laying pipe-lines, building dams, etc.

The scale of the construction work necessitated a powerful industrial base which, of course, the republic did not possess in those days. All the more important, then, was the help which Kazakhstan received from the industrial centres of the other republics and especially from Moscow, Leningrad and the towns of the Donets Basin and the Urals.

Radical changes have taken place in agriculture too. Collectivization of the peasant households began in 1929 with large numbers of nomads switching over to a settled life. Socialist agriculture made rapid progress. By the beginning of the war the yields for the main crops had increased one-and-a-half times compared with 1913, while the grain harvest had increased three-fold compared with pre-revolutionary years.

The same progress, however, was not recorded in animal husbandry which lagged behind the general development.

Establishment of a first-class food industry—meat-packing, dairying and sugar-refining—was a powerful stimulus for agriculture, necessitating accelerated development of animal

husbandry and crop-raising and the introduction of sugar-beet and wine-growing.

The rise of new industrial centres and the expansion of the old ones summoned to life suburban farming and stimulated the spread of agriculture to areas which had never known cultivation. (The Ural Lowlands and the Balkhash area.)

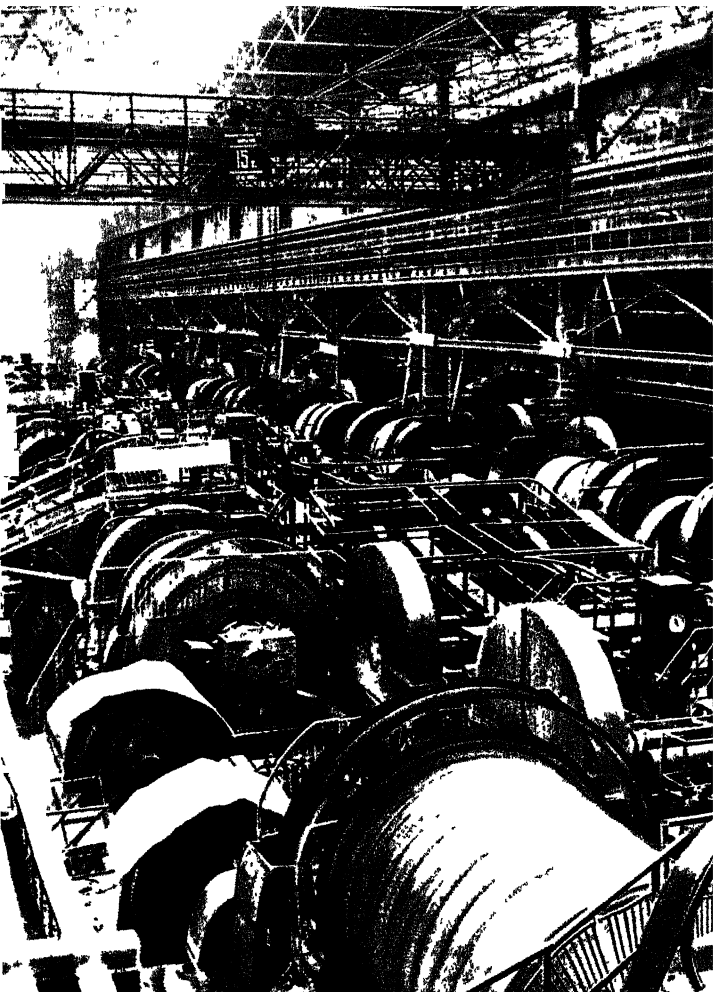
Railroad construction was intensified. The first major line built in Kazakhstan during the years of Soviet power was the Turkestan-Siberian trunk line, known as the Turksib. By 1941 the length of railroads had grown to 5,300 miles compared with 1,290 in 1913.

Its economic, political and cultural achievements enabled Kazakhstan to switch to a new and higher level of statehood.

In 1936 it entered directly into the composition of the U.S.S.R. as a Union republic.

Peaceful construction was interrupted in 1941 when Hitler Germany attacked the Soviet Union. The sons of the Kazakh people fought valiantly in the ranks of the Soviet troops. Dozens of large factories were evacuated from the western areas of the U.S.S.R. to the territory of Kazakhstan. Here in their new surroundings they continued to produce guns, munitions, equipment, uniforms and foodstuffs.





In the post-war years economic development was continued even more intensively. It could now rely on the economic base that had been established in the previous years. Gross output of industry in 1956 was 36 times greater than in 1913 and over four times the level of 1940, while the output of large-scale industry in 1956 was 97 times that of 1913. Large-scale hydroelectric construction has been launched, especially on the River Irtysh. More and more mineral deposits are being exploited and the machine-building industry has made big strides.

In agriculture the biggest event was the drive started in 1954 for cultivation of virgin and fallow lands—a drive which has transformed the entire economy of Northern Kazakhstan and which by 1956 had advanced it to second place in the country for wheat production (after the Russian Federation). In 1956 the Kazakh republic received a high government award—the Order of Lenin—for its agricultural achievements.

The Kazakhstan of today is vastly different from what it was 40 years ago. In this relatively brief space of time, with the fraternal help of the Russian people and the other nations of the Soviet Union, it has been transformed into

heavy industry, light industry and food industry, highly developed crop-raising and the traditional Kazakh animal husbandry.

In fact, nearly all branches of industry and agriculture are represented in Kazakhstan. In addition to extraction of ferrous and non-ferrous metal ores, the vital fuels and raw materials for the chemical industry one finds practically all branches of processing industry.

It is the U.S.S.R.'s chief supplier of non-ferrous metals and its third biggest coal producer.

Its agriculture boasts practically all forms of animal husbandry and the most varied branches of crop cultivation, beginning with grain crops and ending with cotton-growing and medical herbs.

Just now the Soviet Union is setting itself the task of accelerating the development of its eastern areas, and Kazakhstan has a capital investment programme for the current five-year plan (1956-60) of 77,000 million rubles, that is, 7.6 per cent of the total investment for the Soviet Union (the republic accounts for 4.2 per cent of the population of the U.S.S.R.). By 1960 Kazakhstan's industrial output will be 2.2 times the 1955 level. Output of grain will be five times greater, while cotton, sugar-beet milk and wool will be more than doubled.

INDUSTRY

During the first years of the existence of the Kazakh republic there were sceptics who said that plans for its industrialization were simply a pipe-dream, that Kazakhstan's future lay not in factory chimneys but in the traditional stock-raising and crop cultivation. Time has proved them wrong. In fact industry was the chief lever which transformed the republic, did away with its economic backwardness and facilitated the political and cultural growth of its population.

Kazakhstan had to create a new and powerful modern industry practically from scratch, including the main branches of heavy industry, branches that are altogether new for this republic include machine-building, production of mineral fertilizers, artificial fibre, synthetic rubber, oil refining, steel smelting, ferro-alloys smelting, extraction of chrome ores, borates, production of zinc, rare metals, cement, cotton textiles, knitwear, fish canning, dairying and sugar-refining.

Older branches—meat packing, tanning, and copper smelting—have changed beyond recognition, having been thoroughly re-equipped with a resultant big increase in output.

New projects now being built embody the very last word both in Soviet and world technique—some of them being scientific-technological centres where entirely new production methods are worked out for the Soviet Union as a whole. Workers, engineers and students from the other republics of the U.S.S.R. and from the Peoples' Democracies come here to learn.

Coal—black and brown—is the chief fuel used in Kazakh industry. There are three main basins in the republic—Karaganda, Ekibastuz and Turgai—with reserves estimated at tens of billions of tons. There are, moreover, numerous smaller deposits located in the direct proximity of the users.

Whereas prior to the Revolution Kazakhstan's coal output was insignificant (a mere 90,000 tons in 1913), the 1956 output amounted to 31.5 million tons. Most of this coal is mined in the Karaganda basin. The Karaganda deposits have been known for over a hundred years, but the discovery of an entire basin in the area was made in 1920 by Professor Gapeyev. Mining in a big way dates from 1930. The deposits are fairly compact and in some places the seams come right to the surface. As a rule, the near-surface seams consist of brown coal,

extracted chiefly by open-cast methods. Coking coal is located deeper and is mined in the conventional way. Labour productivity in open-cast extraction is two or three times greater than in the pits. The near-surface reserves, however, are not very great, so that expansion of the Karaganda coal industry will take place chiefly by way of sinking new shafts. By 1960 at least 25 new pits with an annual output of 23.7 million tons will be in operation.

Exploitation of the "Second Karaganda"—the Ekibastuz deposits—was started after the war. Ekibastuz is located in the north-eastern part of the republic near the new Akmolinsk-Pavlodar railway and is fairly close to the large industrial centres of Pavlodar and Omsk. It is about the same distance from the industrial towns of the Southern Urals as Karaganda, so its coking coal can be sent to the iron and steel works there.

Small quantities of coal were mined in Ekibastuz before the Revolution. The deposits, however, were only slightly explored. Survey work carried out in recent years disclosed deposits of billions of tons of excellent coking coal. Here, too, the coal is found near the surface; the seams are exceedingly thick. 4.6 million tons were mined in 1956. In the coming

years the further extension of open-cast mining will increase the output many-fold.

Exploitation of the Turgai deposits in the Kustanai region has just begun. Proximity to the neighbouring industrial towns of the Southern Urals makes these deposits exceedingly valuable.

Coal is also the main fuel used in generating electricity in Kazakhstan.

Before the Revolution there were only a few small power stations used for lighting the towns. Their over-all capacity was a mere 2,500 kw., which is less than the power of one Soviet heavy locomotive used in hauling goods trains. In 1956 Kazakhstan generated 6,700 million kw-hrs of electric energy—three times more than the total amount generated in tsarist Russia in 1913. Power output per head of the population has risen from 0.5 kw-hrs in 1913 to 788 kw-hrs in 1956.

There are big steam power stations in Temir-Tau, Balkhash, Petropavlovsk, Alma-Ata, Aktyubinsk, Chimkent, Semipalatinsk and in other industrial centres.

The rivers rising in the Altai Mountains—the Irtysh and its tributaries—are rich sources of power. Before the war one medium station had been built here on the River Ulba. A much

bigger hydroelectric station was completed in 1953 near Ust-Kamenogorsk.

At the moment work is under way on the Bukhtarma hydroelectric station on the Irtysh, below the place where it is joined by the River Bukhtarma. The dam will raise the level of the Irtysh 220 feet. The Bukhtarma storage lake will extend for about 400 miles. A four-chamber lock is being built to let vessels through. The power station will be operated by remote control from a switchboard located tens of miles away.

Work will soon be started on the Shulba power unit on the Irtysh, between Ust-Kamenogorsk and Semipalatinsk. This will be the biggest of the Irtysh stations.

In the south of the republic power units have been built near Alma-Ata on the small rivers Bolshaya and Malaya Almaatinka. Another is under construction on the Syr-Darya not far from Kzyl-Orda. Work will commence shortly on a large station on the River Ili, which, when completed, will reinforce the power base of the Alma-Ata industrial area.

Electricity supply is still one of the "bottlenecks" of Kazakhstan industry. Consequently power station construction is being accelerated to the utmost. In addition to the

units already enumerated, steam power stations are being erected in the vicinity of Karaganda, Kustanai, Petropavlovsk, Pavlodar, Alma-Ata and other towns. By 1960 the total output will have been increased 2.3 times compared with the 1955 level.

Oil extraction plays an important part in the economy of the republic. Output in 1956 exceeded 1.4 million tons compared with 0.1 million in 1913.

The main oil-fields are located along the River Emba, not far from the shores of the Caspian Sea. Emba petroleum is renowned for its excellent quality and yields first-class lubricating oils. One of the drawbacks, however, is that the deposits are not concentrated territorially, being dispersed over hundreds of square miles in sparsely settled semi-desert and desert areas. This complicates extraction and adds to cost of production.

Part of the natural gas found in the oil-fields is used for domestic purposes in the settlements, but for the most it burns away uselessly.

The oil industry is scheduled for considerable expansion.

During the war years refineries were built in the town of Guryev. Guryev, however, is a long way from Northern and Southern Kazakh-

stan—the main consumers of oil products. At the moment a new refinery is under construction in the Pavlodar region.

Non-ferrous metallurgy is one of the most important branches of Kazakhstan's industry. It is located chiefly in the Altai area, in the centre and in the south.

Altai with its immense deposits of complex ores is the chief producer of lead (Leninogorsk), zinc (Ust-Kamenogorsk), copper (Glubokoye), silver, tin concentrates, gold and rare metals.

The copper industry is concentrated largely in the Karaganda region. The Balkhash and the Karsakpai smelting plants use the Kounrad, Dzhezkazgan and other ore deposits.

The lead industry, centred in Chimkent, is based on the Karatau and the Dzhungarsky Alatau deposits.

New deposits of copper ore are now being worked at Boshchekul in the Pavlodar region.

Silver is obtained as a by-product in the smelting of lead, while gold is mined in the Altai Mountains where it is one of the components of the complex ores, and in the Maikain, Akmolinsk and Kustanai regions.

An aluminium industry is now being established in Kazakhstan—factories are being built

on the Irtysh in the vicinity of Pavlodar which will use the bauxite ores of the Turgai deposits (Kustanai region).

While non-ferrous metallurgy made its appearance in Kazakhstan before the Revolution, ferrous metallurgy is one of the latest developments.

Expansion of industry and agriculture, the rise of a major machine-building and metal-processing industry, and the considerable railroad construction necessitated the establishment of a metallurgical base in the republic.

The plant built in Temir-Tau during the war produces steel sheeting, rails for narrow-gauge railways and other types of rolled steel. In recent times enormous deposits of iron ore have been discovered in the Kustanai region (Sokolovskoye Sarbai and Ayat deposits), in the Karaganda region (Atasu and Karsakpai deposits) and in the Pavlodar region (in the lower reaches of the River Shiderta). The ore is of excellent quality. The small expenditure of coke needed in smelting means low cost of production. Coking coal, lime, fire-clay, etc., are available in abundance.

It will be seen, therefore, that Kazakhstan has everything needed for a powerful iron and steel industry which, in addition to supplying

the needs of the republic, will leave plenty over for other parts of the country.

A metallurgical plant, the second biggest in the Soviet Union, now under construction at Solonichka, 25 miles north of Karaganda, will produce iron with a small phosphorite content suitable for processing into high-quality steel. It will work on ores from the Atasu deposits. The first section of this plant will begin production in two or three years. In a few years there will be a town here several times bigger than Temir-Tau, the present iron and steel centre.

Plans are in hand for another iron and steel plant which will use the Ayat phosphorite ores; it will use the Thomas process, and the slag, a valuable by-product, will be used as a fertilizer in the eastern regions.

The ore-enriching plant now being built in the Kustanai region will have a capacity of 10 million tons of raw ore a year. The ore will be mined by open-cast methods and the concentrated product will be shipped to the iron-steel works in the Southern Urals.

The ferro-alloys plant near Aktyubinsk uses the chrome ores mined in Khrom-Tau. Another ferro-alloys plant is being built near Pavlodar.

Machine-building, while a relatively new feature, plays a big role in Kazakhstan's economy, supplying machines and equipment for the main branches of industry and agriculture and also shipping them to other areas of the country and abroad.

Machines and equipment for the mining industry are made in the Karaganda region. Ferrous and non-ferrous metallurgy get their equipment from the heavy-machinery plants in Alma-Ata and Ust-Kamenogorsk; equipment for the oil industry is made in Guryev. Ships are built in Semipalatinsk and in Aralsk, while motors for fishing vessels are made in Guryev. Production of agricultural machinery is centred in Akmolinsk. The large forge and press plant in Chimkent is famous all over the Soviet Union. Light-powered engines are made in Petropavlovsk, weigh-bridges in Kokchetav. Spare parts for agricultural machines and accessories are made in a number of factories.

New branches of machine-building are making their appearance. A rolling equipment plant is under construction in Petropavlovsk, a harvester combine plant—the biggest in the U.S.S.R.—is going up in Pavlodar and a factory that will specialize in machines for

the food industry is being erected in Semipalatinsk.

Kazakhstan's chemical industry has an excellent raw material base in the vast deposits of phosphorites, salts, coal, oil, gas and the residue of the non-ferrous metallurgical works.

By far the most prominent branch is processing of phosphorites.

Over twenty years ago a chemical complex plant was built at Alga to produce phosphates for the agricultural needs of the Kazakh republic and Central Asia. This plant uses local phosphorites, apatites, and materials supplied by the Urals for production of sulphuric acid.

The Chulak-Tau mining-chemical works uses the phosphorites obtained in the Karatau Mountains. A branch line links Chulak-Tau with the Turksib railway.

There is a superphosphates plant in the town of Dzhanibul. The sulphuric acid needed for the production of superphosphates is derived from the pyrite concentrates brought here from the concentration plants in Southern Kazakhstan which also supply lead concentrates to the Chimkent factory. Another phosphorite processing works is under construction in Dzhanibul.

Enterprises of the pharmaceutical branch of the chemical industry are located in Chimkent, where a large factory using local raw materials makes santonin and other medicines and also poisons for combatting agricultural pests.

Manufacture of building materials in pre-revolutionary Kazakhstan was but slightly developed. The main building material in those days was *saman*—clay mixed with straw. The *saman* buildings were none too stable, nor were they pleasing to the eye. Because of the paucity of forests in Kazakhstan timber was rarely used for building purposes and the import of timber from other areas was owing to the lack of roads, a costly undertaking.

Nowadays the republic has its own building materials industry. There are mechanized brickworks in the vicinity of all big towns. In recent years production of prefabricated structures has been expanded with a resultant cheapening and acceleration of building and better quality work. All this has necessitated expansion of cement production. By 1960 output of cement will have increased 8.8 times compared with 1955. New cement works are going up near Chimkent and Semipalatinsk.

Local materials are widely used in rural construction. Among the more valuable of these are reeds, which grow in profusion in Kazakhstan. Mixed with lime, the reeds when pressed make excellent building material. They are used for sheds, barns and other out-buildings on the farms.

Light industry works mainly on local agricultural produce.

The textile industry uses home-grown cotton and wool. Manufacture of cotton fabrics, although a fairly recent development in Kazakhstan, is being accelerated rapidly. In 1956 some 19.3 million yards of fabrics were produced. By 1960 this amount will be doubled.

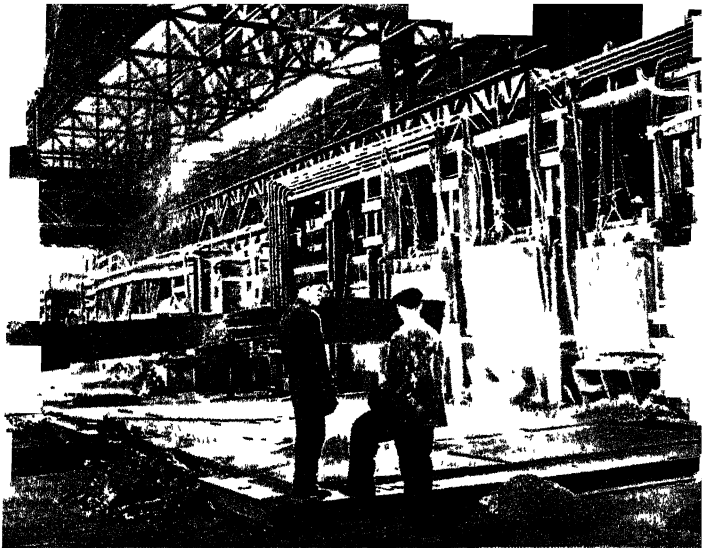
Chimkent is the centre of the textile industry, and new mills are being erected in Alma-Ata.

Woollen textiles are manufactured in Semipalatinsk and in the Alma-Ata area. The 1956 output amounted to 4.2 million yards, including high-quality fabrics for suits and overcoats.

Knit goods factories are found in many towns, but chiefly in Alma-Ata, Semipalatinsk and Chimkent.

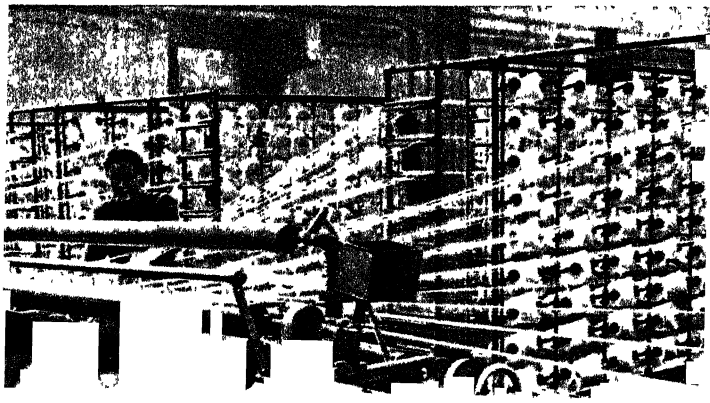
The biggest clothing factories are located in Alma-Ata, Semipalatinsk, Kustanai and Petro-





A shop of the iron and steel plant in Temir-Tau

A shop of the Chimkent Cotton Mill



Pavlovsk; new factories are under construction in Karaganda, Pavlodar and Ust-Kamenogorsk.

Felt goods, too, are made from local raw materials in Semipalatinsk, Petropavlovsk, Uralsk and Alma-Ata and in other towns. These factories specialize in the warm felt footwear essential for the grim winter in the northern areas of Kazakhstan. In 1956 nearly two million pairs were produced.

Tanneries are centred in Semipalatinsk, Petropavlovsk, Dzhambul, Kzyl-Orda and Uralsk—towns with large meat-packing plants which supply the raw material for this branch of industry. Numerous varieties of leather are manufactured in the Kazakhstan factories.

Leather footwear production is concentrated in Alma-Ata, Semipalatinsk, Dzhambul and Chimkent. The Dzhambul footwear plant—the biggest of them all—will, when fully completed, have a capacity of 4.5 million pairs a year. Total output of leather footwear in Kazakhstan in 1956 amounted to 6.8 million pairs, by 1960 it will have risen to 10 million. The first factories specialized in making the traditional national footwear known as the *ichigi*; nowadays fashionable models are

made. Sheepskin overcoats are made in Semipalatinsk, Petropavlovsk and Uralsk.

Food industry factories, located in practically all the towns of the republic, likewise use chiefly local materials. Some of them, for example the bakeries, macaroni factories and wine distilleries serve only local needs. The products of others—tinned meat and fish, flour, dairy products and salt—are sent to other republics.

The modern food industry has wrought great changes in the local diet, having introduced a greater variety of high quality foods.

Meat packing, which is directly linked with the traditional animal husbandry, is the principal branch of the food industry. In the past the cattle were killed in primitive open-air slaughter-houses. Nowadays the large stockyards have up-to-date equipment. The biggest of these, the third largest in the U.S.S.R., is located in Semipalatinsk, and there are others in Petropavlovsk, Uralsk, Kzyl-Orda, Alma-Ata and Karaganda. In autumn, during the rush season the Semipalatinsk stockyard handles 18,000 sheep, 2,000 cattle and 2,000 pigs daily. These highly mechanized stockyards, many of them with automation, turn out over a hundred varieties of meat products, in-

Including tinned meat, smoked sausage, *pelmeni*, etc. All production processes are under strict sanitary supervision.

The dairy industry is located chiefly in the north and north-eastern areas where there are hundreds of butter- and cheese-making factories. Pavlodar is famous for its condensed milk.

Flour milling and manufacture of cereals are features of most big towns. There are five sugar refineries in the republic, all in the south-east. In 1956 they produced 95,000 tons of sugar.

Kazakhstan's highly developed fish industry is located chiefly along the Caspian coast and in the vicinity of the Aral Sea and lakes Balkhash and Zaisan.

Prime "red fish," including different varieties of sturgeon, and also herring and sprats are caught in the Caspian Sea and the River Ural.

The Aral catch includes bream, barbel and roach; the sturgeon has been introduced here from the Caspian; in recent times it has also been acclimatized in Lake Balkhash, while carp is now bred in lakes Zaisan and Ala-Kul.

There are dozens of fish-curing and refrigerating plants in the republic. The large cannery

in Guryev turns out millions of tins a year. Smaller canning factories are found along the Aral Sea and on the shores of Lake Balkhash. Kazakhstan's caviar, sturgeon, and tinned, smoked, dried, salted and frozen fish are well known all over the Soviet Union.

Salt is another important product. The two main salt-producing areas are Pavlodar and Aralsk. The Pavlodar salt lakes supply not only Kazakhstan but also Siberia and the Far East. Aralsk salt is shipped to the other Central Asian republics and is used in the local fish-curing plants. Salt extraction and grinding are highly mechanized.

Since manufacture of lake salt is a much cheaper process, rock-salt is not mined in Kazakhstan.

Kazakhstan's industry has excellent prospects for development. During the 1956-60 period, over 180 large enterprises and ore mines will go into operation. The rapid industrial growth, however, calls for urgent solution of the problem of water supply, shortage of which at the moment is holding back the development of a number of areas.

The Kazakh Academy of Sciences has submitted a project for using Irtysh water from

The Shulba storage lake above Semipalatinsk for the needs of the industrial towns in Central Kazakhstan. The plan envisages construction of a canal to the central areas of the republic via Karaganda and Dzhezkazgan. The length of the canal, not counting the branches, will be over 600 miles. And since the main consumers of the Irtysh water are located higher than the level of the storage lake, the plan provides for a series of powerful pumping stations which would raise the level of water 1,600 feet.

AGRICULTURE

Kazakhstan, a powerful grain and livestock base for the whole of the Soviet Union, is a republic of vast wheat fields and boundless pastures. One-seventh of the entire crop area of the U.S.S.R., seven per cent of the beef cattle and sixteen per cent of the sheep fall to its share.

The area of pastures and cultivable land exceeds 300 million acres—more than a quarter of the entire agricultural land of the Soviet Union. A large part of it, however, consists of seasonal pastures. About half of the republic consists of land which is unsuitable

for agriculture without radical improvements (water supply, etc.). Productivity of pastures and cultivated land, apart from a few exceptions, is lower than in the main areas of the European part of the U.S.S.R. In the non-irrigated lands of the northern belt where the climate is dry, fat years are followed by lean years, and there are seasons when the crops fail completely. Both stock-breeding and crop-raising in the Kazakh republic as a whole, excluding the irrigated lands and the suburban farms, are more extensive than in the European parts of the country. This is explained by the climate (frequent droughts) and by economic factors (sparse population and insufficient means of transport). Production of meat and milk per 100 hectares (250 acres) of ploughland, meadow and pasture in Kazakhstan as a whole is several times lower than in the Russian Federation or in the Ukraine.

As already mentioned, in the past crop-raising did not play a very important role in Kazakhstan. It dates from the beginning of the XXth century and it assumed particularly wide scope after the Revolution with the organization of kolkhozes, nomad settlement, mechanization of agriculture and construction of new irrigation installations. At present crop-

Raising holds first place, although there are many areas specializing solely in stock-breeding, chiefly sheep-farming.

The crop area for all cultures which in 1913 was just over 10 million acres, and had grown to 17 million by 1940, amounted in 1956 to 70 million acres. The rapid growth is explained by the large-scale cultivation of virgin and fallow lands which began in 1954. Nearly 50 million acres of new lands were ploughed in 1954-56. More than half of the virgin and fallow lands brought under cultivation in the Soviet Union lies within the borders of Kazakhstan. This sweeping progress required much manpower and machinery 166,000 tractors and tens of thousands of harvester combines and other machines were assigned to the job.

The conquest of the virgin and fallow lands is one of the heroic pages in Kazakhstan's history.

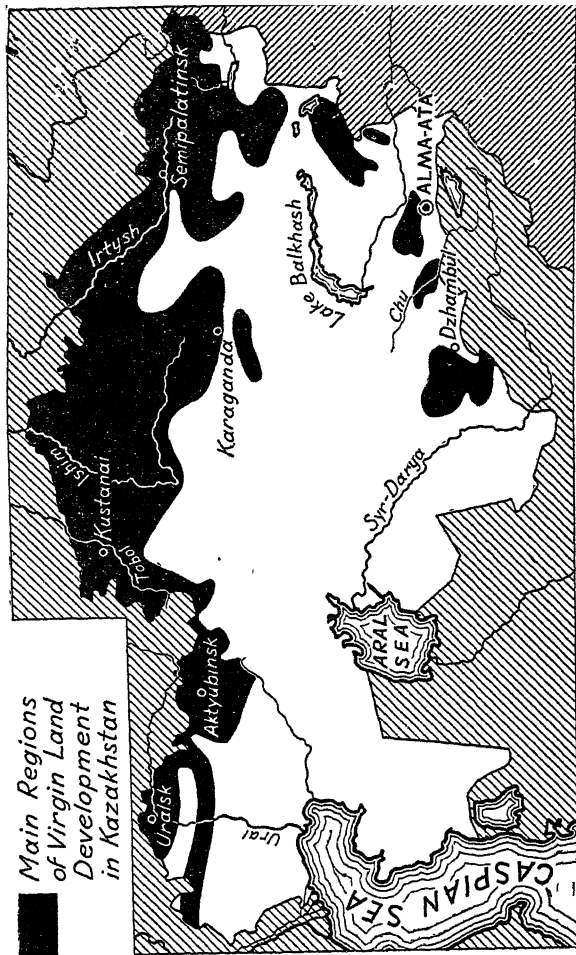
Enthusiasts from the R.S.F.S R., Ukraine, Byelorussia, Latvia and other republics and numerous agricultural specialists set out for the Kazakh steppes. Altogether over 600,000 people have settled in Kazakhstan for this purpose. The pioneers set up tents in the bare steppe—houses came later. The state made financial grants and supplied the building ma-

terials. Today the initial difficulties have been overcome, the steppe has been peopled and one can see hundreds of new settlements and villages. Roads and narrow-gauge railways have been built and postal and telegraphic communications installed. Many of the settlers have moved into comfortable houses with electric light and modern conveniences. During 1954-55 over 1,000,000 sq. yards of dwelling space, some 300 canteens, shops, bakeries and public baths were built on the new state farms. Building materials factories, elevators, and repair shops have sprung up in the steppe. Schools, hospitals, clubhouses, libraries and cinemas have made their appearance. A new life has come to the once remote areas.

This cultivation of new lands was made possible by the large-scale mechanization.

Because of the dry climate field work has to be compressed into a few days, which would be impossible without mechanization. For example, in spring it is necessary to sow something like 5,000,000 acres every day. Land is now being brought under cultivation which in the past was regarded as useless and would have remained useless were it not for the machinery and new techniques.

*Main Regions
of Virgin Land
Development
in Kazakhstan*



The most rational form of organizing the economy in this sweeping offensive against the virgin land was the state farm. State farms account for half of the new lands. During the 1954-55 season 380 grain-growing state farms were established, each of them cultivating from 50 to 70 thousand acres. By the end of 1956 their number had grown to 628.

The large number of state farms in the virgin lands has changed the balance in the republic between the state (sovkhoz) and co-operative (kolkhoz) agricultural production. Kazakhstan now stands out among the other republics for state farm output.

By the end of 1956 there were 2,700 collective farms in the republic. Most of these unite from about 100 to 300 peasant households. The Kazakh kolkhoz differs sharply from that in the other republics in size of farms. Whereas throughout the Soviet Union most kolkhozes cultivate from 1,000 to 5,000 acres, 71 per cent of the Kazakh kolkhozes cultivate above 5,000 acres, 40 per cent cultivating upwards of 12,000 acres.

The kolkhozes use the machine park of the machine-and-tractor stations (M.T.S.), of which there were 468 by the end of 1956.

The tractor park of the Kazakh machine-and-tractor stations is ahead of all the other republics in respect of the number of power-units per station. Two-thirds of them have a park of 2,000 horse-power units each. Each M.T.S. serves, as a rule, from 4 to 10 kolkhozes. The number of kolkhozes attached to the M.T.S. in Kazakhstan is less than in most of the other republics; this is explained by the large areas farmed by the kolkhozes and the vastness of the territory.

In 1956 the republic had 218,000 tractors (about 14 per cent of the over-all tractor park of the U.S.S.R.) and 73,000 harvester combines (over 19 per cent of the total for the U.S.S.R.). Moreover, during the harvest season the farmers are helped by the combines and combine crews from places which harvest the crops earlier. Last year, for example, over 11,000 combines came to Kazakhstan from Uzbekistan, the Ukraine and other republics to help with the harvesting. Lorries were loaned from towns to transport the grain from field to railway station and elevator.

Practically all the grain is harvested by combines. Ploughing and sowing are 100 per cent mechanized. 80 per cent of hay-making in the

collective farms is done by tractors and self-propelled mowers.

Aviation is used on a growing scale for sowing, feeding the plants with artificial fertilizers, combatting pests and chemical weeding of the wheat fields (mixtures sprayed from aircraft destroy the weeds but are harmless for the wheat). In the wine-growing districts and in the orchards and woods (for example in the Alma-Ata region) helicopters are widely used for combatting pests.

Animal husbandry is not mechanized to the same extent. But on many of the farms fodder is prepared and transported mechanically and machines are used for water supply and in milking. Electrical sheep shearing is widely practised.

Irrigated farming is conducted on something like four million acres in the more arid regions of the republic, especially in the south. Altogether there are over 600 irrigation installations in these areas. Over-all length of the main canals is in excess of 9,000 miles. The irrigated areas are mostly in the basin of the Syr-Darya. Irrigated cotton-growing is practised in the Hungry Steppe, along the border with Uzbekistan. By 1960 the irrigated land will have increased by about 500,000 acres.

Grain crops account for 81 per cent of the sown area. The grain farms are concentrated mainly in the northern belt which extends from the border with the Saratov region in the west to the Altai Mountains in the east. Here crops are raised without irrigation. Grain is grown on a much lesser scale on irrigated lands in the southern marches of the republic, chiefly in the foothills of the Tien-Shan Mountains.

Cultivation of the virgin and fallow lands has resulted in a sharp increase in grain crop—16 million tons were delivered to the state in 1956. First place among the grain crops is held by wheat which in 1956 was grown on 45 million acres. The Kazakh hard spring wheat, glass-like in appearance, yields excellent flour. Autumn wheat is sown on a lesser scale, usually on irrigated land in the foothills of the south.

Millet, distinguished for its drought-resisting qualities, is a popular crop. It is concentrated chiefly in the Aktyubinsk, Western Kazakhstan, Kustanai and Pavlodar regions. Chaganak Bersiyev, renowned millet farmer in the Aktubinsk region, holds a world record for yield on irrigated land—284 bushes per acre.

Rice-growing is practised in the valleys of the Syr-Darya and Karatala where something

like 78,000 acres are planted to this crop. Record rice crops are grown on the collective farm fields in the Kzyl-Orda region. The Kzyl-Tu Kolkhoz, where the rice-grower Ibrai Zhakhayev regularly gathers high crops, is renowned throughout the republic.

In recent years maize has become a popular crop, sown both for grain and for silo-feed for livestock. In 1955, 2,000,000 acres were planted to maize; in 1956 the acreage reached 4,567,030 acres.

The most important technical crops are cotton, sugar-beet and tobacco.

Cotton is grown mainly in the south. It was cultivated here before the Revolution, but its real large-scale development dates from Soviet times, and has been further facilitated by irrigation of the Hungry Steppe. Some growers gather 4,361 pounds per acre.

Beet-growing, first introduced in the 1930's, is centred in the irrigated lands in the south-east, in the Taldy-Kurgan, Alma-Ata and Dzhambul regions. Record crops are gathered. Olga Gonazhenko, Hero of Socialist Labour, gathered 66 metric tons per acre.

Tobacco well known for its aromatic qualities is grown in the Alma-Ata region and, on

a lesser scale, in the Dzhambul and Taldy-Kurgan regions.

Other technical crops grown include sunflower (in the north-east), the opium poppy (Alma-Ata region), castor-oil plant (Syr-Darya area), kenaf and hemp in the Alma-Ata and Dzhambul regions.

During the years of Soviet rule the area sown to vegetables and melons has been greatly extended. Compared with 1913 the area sown to potatoes has increased four-fold, and to vegetables three-fold. Although this represents a sizable increase it still falls far short of the needs of the population. In recent times measures have been taken to extend the areas sown to potatoes and vegetables.

The Kazakh republic is famous for its melons.

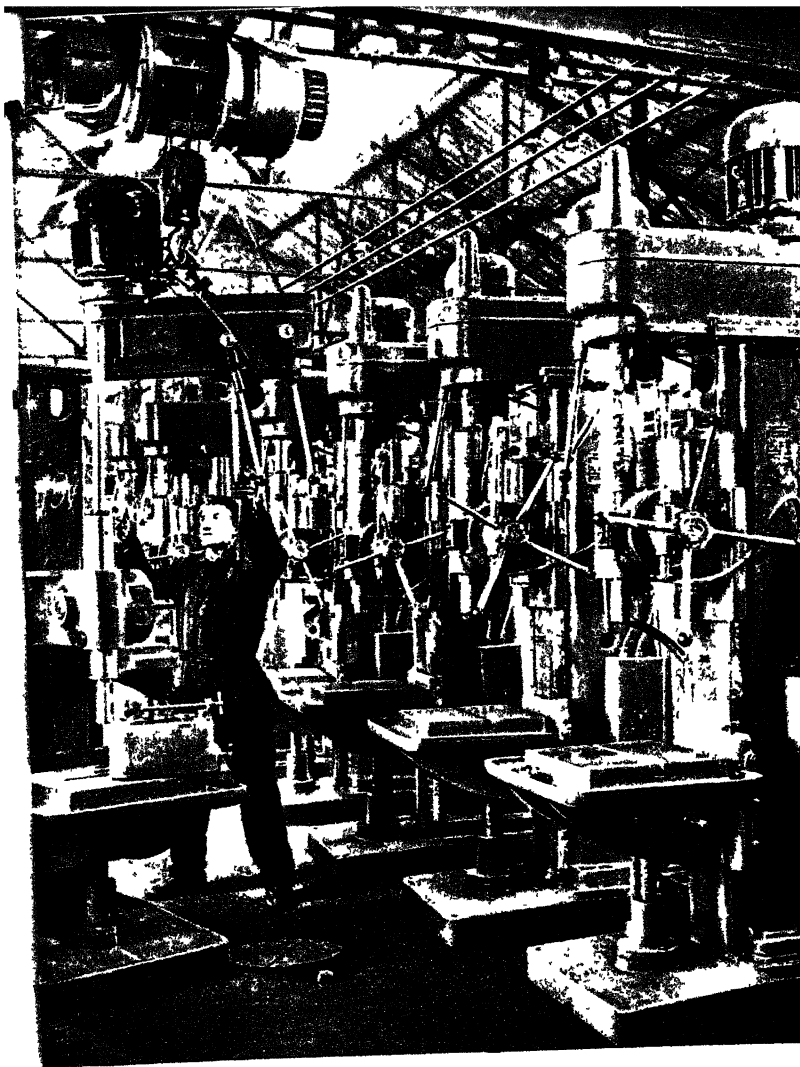
A feature of the towns and especially the new towns in the central areas is the suburban vegetable and dairy farms. Large state farms have been organized to supply the urban population with vegetables, melons, milk, etc. Artificial watering, trench cultivation and other methods for getting good crops in semi-desert and desert conditions are practised. Much investigation in this direc-

tion has been carried out by local research stations.

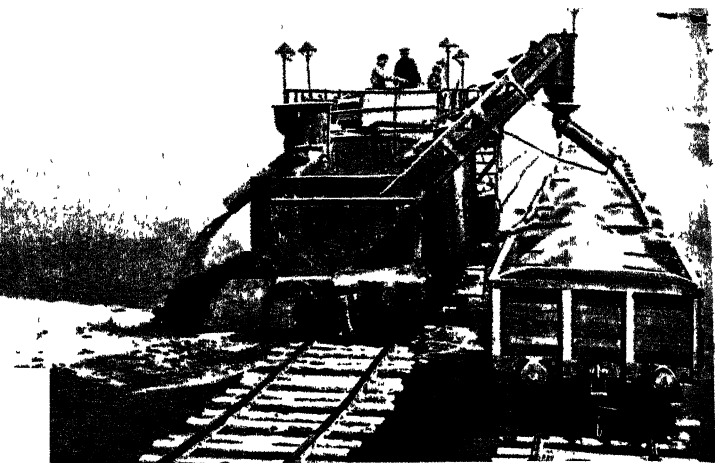
Vineyards and orchards are located chiefly in the south where the winter is less severe. The luxuriant orchards of Southern Kazakhstan are renowned for their fragrant and juicy apples, pears, peaches, apricots and other fruits. The vineyards grow grapes for the table and for wine-making. Grape yields range from 8,900 to 17,800 and even 26,700 pounds per acre. Much work has been done in recent years to develop fruit trees capable of standing up to severe winters. This has made it possible to advance the orchards to the north. In Semipalatinsk and in the eastern regions grapes now yield 4,000-4,500 pounds per acre, and in some kolkhozes up to 6,700 pounds.

Big changes have taken place in the methods of stock-breeding and in the stock itself. Nomad grazing has been replaced by seasonal pasturing and fodder feeding. Greater emphasis is now given to raising beef cattle and hogs. In sheep-farming the coarse-wool breeds are being replaced by fine-fleeced and semi-fine breeds.

The sharply expressed seasonal nature of the pastures and their territorial dispersal necessitates fairly long drives from one district to

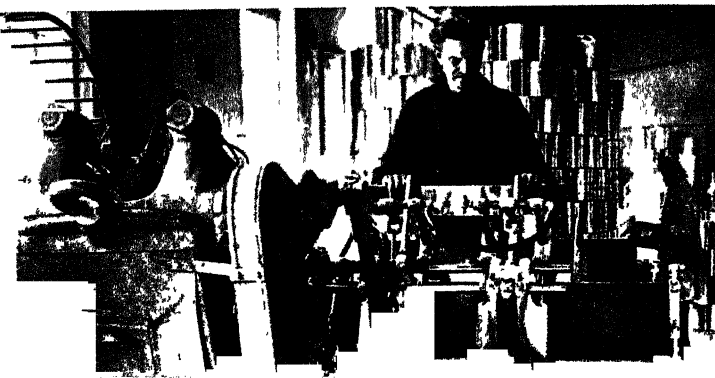


The XX Years of October Machinery Plant in Alma-Ata
which specializes in drilling machines



Mechanized extraction at a salt lake in the Pavlodar region

Fruit-cannery in Alma-Ata



another. Utilization of the immense pastures is impossible by other means. Hay-cropping is practicable only in limited areas, since on most of the pastures grass is sparse and does not reach a great height. The hay often is not worth the expenditure of manpower, machinery and fuel.

In the wintering places sheds and houses are built for stock (mostly sheep and horses) and herdsmen, reserves of fodder are stored and water-supply ensured. Weather stations give warning of the approach of snow-storms and blizzards and of sudden falls in temperature. Radio transmitters enable the herdsmen to maintain contact with the district centres. First-aid and veterinary service is provided in the wintering places.

Mobile pasturing, notwithstanding its advantages, has its negative sides; it is handicapped by weather vagaries and exhaustion of cattle, even with the best organization, is fairly considerable during the long drives. For this reason plans are now in hand gradually to reduce the cattle drives.

Expansion of fodder-growing is of enormous importance for the further development of animal husbandry. The area sown to fodder crops, especially maize, is being greatly extended.

Wild grasses are used more extensively for silo and close attention is devoted to enlarging the hay crop. With this end in view what has become known as liman irrigation is being practised. By means of earthen dams and snow dams the thaw water is retained on meadows for 10 or 15 days during the spring with a resultant increase in the hay crop.

To ensure the cattle on the pastures ample supplies of water, artesian wells are sunk, ponds dug, dams erected and thaw water conserved. Wells are being sunk in the Bet-Pak Dala Desert where hundreds of thousands of sheep graze during the spring months. However, to this day tens of millions of acres of seasonal pastures in the deserts cannot be used because of lack of water.

Sheep-farming is the most important and the most profitable branch of Kazakh animal husbandry. In 1956 the republic had over 20 million sheep. The dominance of sheep-farming in Kazakhstan is of long standing. In view of the scanty and low grass on the desert-steppe pastures, the sheep, a more mobile animal, having, moreover, thin lips, makes more effective use of the grass. Whereas the cow consumes not more than 50 per cent of the grass, the sheep nibbles it to the extent of 60-70 per cent.

Labour costs in sheep-farming are much lower, and productivity, calculated per acre of pasture, higher.

Before the Revolution Kazakhstan specialized only in the coarse-wool, fat-tailed sheep. Fine-fleeced sheep were reared in small numbers only in the valley of the Irtysh. With the advent of Soviet rule and the growing prosperity of Kazakhstan and the other republics, demand for high-quality woollen fabrics has increased, hence the necessity of breeding fine- and semi-fine-fleeced sheep. Consequently, together with increasing the flocks of fat-tailed sheep, which have by no means lost their importance, breeding of semi-fine and fine-fleeced sheep has developed in a big way. For example, in the Taldy-Kurgan region fine-fleeced sheep make up 85 per cent of the flocks, and 86 per cent in the Alma-Ata region. In 1955 more than a third of all the wool clipped in Kazakhstan came from fine and semi-fine fleeces. In this connection new methods of sheep-raising had to be evolved since this breed needs warmer winter quarters and good fodder.

At present about a dozen breeds of sheep are reared in Kazakhstan. Of these the most wide-

spread are the Soviet Merino, the Caucasian, Altai, Stavropol, Edilbayev, Arkhar-Merino and the Kazakh fine-fleeced breeds. The two last have been developed by Kazakh stock-breeders. The Kazakh fine-fleeced sheep is the result of crossing the fat-tailed sheep with the fine-fleeced "Prekos." This breed is distinguished for its sturdiness and excellent quality of its meat and wool.

The Arkhar-Merino breed is a cross between the Merino and a wild mountain sheep known as the Arkhar. It yields an excellent fine fleece, is sturdy, mobile and adapted to the long drives and is especially favoured in the mountain areas; it is now being bred on the collective farms of the Alma-Ata and Taldy-Kurgan regions.

The karakul sheep, known for its valuable skin, is reared in the south and west. Kazakhstan holds second place in the Soviet Union (after Uzbekistan) for karakul sheep-breeding.

Horned cattle make up about one-fourth of the herds in the republic. In 1956 they numbered 4.8 million, including 1.7 million cows. Beef and dairy cattle are reared chiefly in the north and north-east. In the areas of seasonal

pasturing the herds of beef and dairy cattle are fewer.

Horse- and camel-breeding are features of long standing in Kazakhstan. In the past these animals served as the main means of transport for the nomads. The Kazakh horse is a strong, hardy animal. There are a number of large horse-breeding state farms in the republic. Camels are used chiefly in the desert and semi-desert western regions along the lower reaches of the rivers Ural and Syr-Darya. They can feed on wormwood, dry agul and other desert plants which are not eaten by other animals.

The cultivation of virgin lands and the expansion of fodder crops has created better conditions for animal husbandry and for switching to more intensive forms. Emphasis is now being laid on milk production, and pig-farming; in sheep-farming the accent is on developing fine-fleece and semi-fine-fleece breeds. During the first years of their existence the state farms in the virgin lands concentrated on grain crops but now they are gradually taking to dairy-farming, poultry-farming and hog-breeding; they are now becoming multi-branch farms, a development which enables them to make better use of the by-products of

grain cropping. There are now greater possibilities for making full use of all the land and of partly satisfying the needs of crop-growing in the matter of organic manures.

At the moment Kazakhstan's agriculture is on the upsurge. A particularly rapid rate of development is taking place in the grain-growing, production of wool and cotton. A sharp increase in fine-fleece wool production will be achieved by setting up some 100-120 new sheep-breeding state farms in the eastern parts of the republic where pastures and water are ample.

For the purpose of ensuring water supply 12,000 wells are being sunk, thousands of ponds and reservoirs and hundreds of miles of canals dug. This will make possible the exploitation of additional millions of acres of pasture lands.

TRANSPORT

The vastness of the territory of Kazakhstan with its sparse settlements puts many difficulties in the way of developing its economy. One of the most acute problems is that of overcoming the expanses

Many parts of the republic are separated by thousands of miles from the vital economic centres of the country and the distances between towns are enormous. Mineral deposits, manufacturing centres and agricultural districts are often separated by hundreds and sometimes by thousands of miles. This state of affairs hinders the development of external and internal communications and makes heavy demands on transport. The share of transport in cost of production in Kazakhstan is considerably higher than in many other republics and districts with greater density of population and more compact industry and agriculture. It is not so much a matter of heavy transport costs as it is of means needed to build railways, highways, pipe-lines, etc.

Old Kazakhstan was a completely roadless country. Keynote of the history of Soviet Kazakhstan, from the very first days of its existence, is the effort to create a transport network. And in view of the fact that to this day the problem has not been solved completely, transport construction occupies quite an important place in development plans.

Its continental situation and scarcity of waterways explains the major role of overland transport—railways and highways. At the mo-

ment the railways are the principal form of transport. They link the entire territory into a single economic whole. Economic contact between Kazakhstan and the other republics of the Soviet Union is maintained chiefly by the railways, which take the coal, iron ore and non-ferrous metal ores, oil and grain to their destinations and bring in timber from the Siberian forests.

Before the Revolution only one railway—the Orenburg-Tashkent line—ran through the central regions of Kazakhstan. Rich areas such as Altai, Karaganda, Emba and Semirechye* were not connected by railway and were cut off from the civilized world by hundreds of miles of roadless country.

Development of these areas urgently necessitated the building of railways. And this was done. Iron roads were laid across steppe and desert. The local inhabitants, alarmed at first by the appearance of locomotives and trains which they named *shaitan-arba*, the devil's carriage, soon got used to them. Much railway

* *Semirechye*—(Seven Rivers—in Kazakh Jetisu) is called so after the rivers which flow into Lake Balkhash. Before the Revolution South-Eastern Kazakhstan and part of Kirghizia were known by this name

construction has been carried out since the advent of Soviet rule. Total length at present is in the vicinity of 6,000 miles.

The 1920's saw the building of the Petropavlovsk-Borovoye line, later extended to Karaganda and Balkhash. Its opening gave an impetus to the development of the central areas of the republic. The Turkestan-Siberian mainline, known as the Turksib, which was opened in 1930, links Siberia via Kazakhstan with the Central Asian republics. With the construction of the Turksib the eastern and south-eastern areas developed rapidly. Later, the Zharyk-Dzhezkazgan, Akmolinsk-Kartaly, Guryev-Kandagach-Orsk and other lines were built.

The Mointy-Chu line, uniting Northern Kazakhstan and Karaganda with the south and the Central Asian republics, was built after the war. Karaganda coal is transported along this line to Southern Kazakhstan and Central Asia. Simultaneously, the manufactures of the factories in Alma-Ata, Chimkent, Tashkent and the agricultural products of Southern Kazakhstan and Central Asia have been given an outlet to Central and Northern Kazakhstan. Another new line—the Akmolinsk-Pavlodar railway—is the central link of the South-Siberian trunk line.

A tremendous fillip was given to rail and road construction by the settlement of the virgin lands. Over 600 miles of railway were laid in 1955 alone.

At present Kazakhstan's rail network is shaped as follows: north and south are linked by three main lines, cutting right across the republic—Orenburg-Tashkent, Petropavlovsk-Karaganda-Brlyk station (near Chu),* and the Turksib line running from Semipalatinsk via Alma-Ata and Chimkent to the Arys station.

As yet there are no main lines uniting west and east similar to the three north-south arteries. The Kazakhstan sector of the Trans-Siberian line runs in a lateral direction (through Petropavlovsk), but it is only 100 miles long. A larger part of the territory is intersected by the South-Siberian railway (Magnitogorsk-Akmolinsk-Pavlodar-Stalinsk), which links the Urals, Kazakhstan, the Altai territory and Kuzbas; at the moment this line is being continued both in the direction of the Volga and eastwards through the southern part of the Krasnoyarsk territory. The South-Siberian line takes

* The Trans-Kazakhstan railroad.

heavy traffic between Kazakhstan and the South Urals—transporting Karaganda and Turgai coal, Kustanai iron ore, etc.

The other lines unite the different industrial areas with the main railway lines of the republic.

Extensive railroad construction now under way includes the Guryev-Astrakhan line which will link Western Kazakhstan, including the Emba oil-fields, with the Volga and the North Caucasus and will be the shortest route from the Caucasus to Siberia. The Yessyl-Turgai line will give the Turgai bauxites an outlet to the South-Siberian trunk line whence they will be taken to the aluminium plant in Pavlodar. The Kustanai-Tobol line will link Kustanai with the South-Siberian line, enabling the Kustanai iron ore to be carried to the South Urals.

Narrow and broad-gauge railways now being laid in the virgin lands areas will facilitate delivery of materials needed for their development and shipment of agricultural products.

Another railway under construction is the Aktogai-Druzhba sector of the Sino-Soviet Lanchow-Aktogai line, which will link the main regions of China with the Soviet Union. It

runs through the Dzhungarskiye Gates and will join the Turksib at Aktogai. The border station on the Soviet side will be known as Druzhba, meaning Friendship, and on the Chinese side—Uhao, which also means Friendship, in token of the friendship of the Soviet and Chinese peoples.

Diesel locomotives are replacing the ordinary steam locomotives on a number of sectors, which, in view of the scarcity of fresh water, is a development of special importance for Kazakhstan. Diesels have already replaced steam locomotives on the Mointy-Chu line, Orenburg-Tashkent and others.

Road transport is chiefly used for short runs and also for taking goods to the railways. There are a number of trunk roads in the republic. Because of the sparsity of railroads, the radius of motor vehicle journeys is much greater than in the European part of the Soviet Union.

Road transport which had its beginning in Kazakhstan only in the 20's is now a large-scale enterprise. Over-all length of motor-highways at present is in the vicinity of 70,000 miles.

The principal highways are Alma-Ata-Frunze-Dzhambul, Chimkent-Tashkent, Semipala-

tinsk-Pavlodar-Omsk, Petropavlovsk-Kokchetav-Atabasar, Pavlodar-Karkaralinsk. Of primary importance are the highways running to Sinkiang.

During the two years 1955-57 over 1,300 miles of roads were built in the virgin lands. The latest road-building machinery is used in this work.

Water transport is of importance only in a few areas of the Kazakh republic. Ships ply between the Caspian ports of Guryev and Fort Shevchenko and Astrakhan. There are also shipping lines on the Aral Sea, on lakes Balkhash and Zaisan and on the rivers Irtysh, Syr-Darya, Ural (from Guryev to Orenburg during the spring flow), and Ili. The chief cargoes are building materials and grain.

Air transport is highly developed in Kazakhstan with its vast expanses. The main Moscow-Alma-Ata airline runs through Uralsk, Aktyubinsk, Kustanai, Karaganda and Balkhash. There is a ramified network of internal airlines—tens of thousands of miles. The Alma-Ata-Peking line links Kazakhstan with the Chinese People's Republic.

Aeroplanes in Kazakhstan sometimes carry cargoes which are unusual for other areas.

Planes have been used to transport oil-cake and hay for herds on the winter pastures during snowfalls and when ice-crust formed on the pasture after a thaw.

Pipe-lines are found only in the western parts and in the northern marches. An oil pipe-line, 500 miles long, which runs from Guryev to Orsk, takes the Emba oil to the Urals. The Tuimazy-Omsk oil pipe-line runs through Petropavlovsk. The Omsk-Pavlodar pipe-line, now under construction, will take Bashkirian oil from the main Siberian pipe-line to the Pavlodar refinery.

Expansion of all forms of transport in Kazakhstan during the years of Soviet rule has brought the various parts of this large country closer together; it has facilitated the economic development of formerly remote areas, furthered the economic unity of the republic and territorial division of labour, has brought about the discovery of new resources and has strengthened Kazakhstan's economic contact with other republics of the Soviet Union and with the foreign countries.

POPULATION, LIFE AND CULTURE

According to data of April 1956, the Kazakh republic has a population of 8.5 million. For density of population it lags behind all the Union republics with the exception of Turkmenia: on the average, there are eight persons for every square mile of territory. The explanation is that vast expanses are still uninhabited or are used only for grazing.

Most of the non-inhabited and sparsely populated areas are situated in the central part of the republic. The border fringes are more densely populated. For this reason, the population chart of Kazakhstan in the past was often compared to a coral atoll—a circle of coral reefs with a lagoon in the middle, the lagoon being the sparsely populated territory in the centre.

In our times, however, the central areas, too, have large centres of industry with a considerable population, so that the comparison with the "atoll" no longer holds, although the northern, eastern and southern fringes remain, as heretofore, the most densely populated.

Kazakhstan is a multi-national republic. To-

gether with Kazakhs* there are Russians, Ukrainians, Uzbeks, Koreans, Uigurs, Dungans and other nationalities. In 1955 the deputies to the local Soviets numbered 29,393 Kazakhs, 23,040 Russians, 6,546 Ukrainians, 935 Tatars, 797 Tajiks, 292 Uigurs, 286 Poles, 186 Dungans, 98 Armenians and representatives of other nationalities.

Tsarism sowed discord between the different nationalities so that they could be more easily exploited. However, despite this, friendship between the Russian and Kazakh working people is of long standing. In the coal mines, ore workings and factories, Kazakhs and Russians worked side by side in comradely harmony. Kazakh and Russian peasants laboured together on the fields; they fought together for their rights against tsarist tyranny, against Russian and foreign capitalists and against the Kazakh feudal beys. Their friendship grew stronger with the advent of Soviet rule.

Big changes have taken place in the life of the Kazakhs since the October Revolution. Practically the entire peasantry is united in collective farms. Tens of thousands of combine

* There are over half a million Kazakhs living in the Sinkiang-Uigur autonomous area of China



New settlement at the Traktorist State Farm (Karaganda region), one of the many new state farms in the virgin lands

Silo aggregate harvesting maize in the Kokchetav region





operators, tractor drivers and other mechanics work in the republic's agriculture.

Before the Revolution the chief occupation of the Kazakhs was animal husbandry. During the years of Soviet rule a 400,000 strong army of highly skilled industrial workers, consisting of representatives of all the nationalities, has been trained.

Making skilled workers out of yesterday's nomads, people who had not the slightest idea of modern industrial production, was no easy task. Russian workers, foremen and engineers patiently and selflessly initiated the Kazakhs into the know-how of their trade. Utmost tact, attention and good knowledge of the Kazakh aul and of the psychology of its inhabitants were needed for this job. Each new enterprise became a centre for training skilled workers. Young Kazakhs were sent at state expense to study in Moscow, Leningrad, the Donets Basin and to the industrial centres in the Urals whence they returned with industrial skills.

These efforts resulted in the training of considerable numbers of skilled Kazakh workers, capable of handling the complex machines—of which the Kazakh people could not even dream in tsarist times.

A national intelligentsia, born of the people and closely linked with the people, grew up and developed in Kazakhstan. In all branches of industry there are Kazakh technicians, engineers and economists. Many Kazakhs are factory managers and hold other leading posts. In December 1956 the republic had 19,600 engineers and 37,500 technicians. In the same year agriculture had over 8,900 crop-raising and livestock experts and veterinary surgeons with higher and 15,800 with secondary education.

In pre-revolutionary Kazakhstan woman was a slave with no rights of any kind. Having bought his wife, the husband acquired her as personal property. In the event of his death the wife was transferred to the possession of his next of kin.

Soviet rule emancipated the Kazakh woman giving her civil rights for the first time. Bride barter, polygamy and other medieval customs which lowered the dignity of women were abolished. The opportunity to work in socialist enterprises was of the greatest importance for the realization of women's equality. Gradually, women were drawn into industry, this process being accompanied by large-scale construction

of nurseries and kindergartens, by education and political enlightenment. Women now work in all branches of industry (34 per cent of all factory and office workers), in the different spheres of state administration, science and art.

Over 17,000 women work as mechanics in the machine-and-tractor stations. In the Karaganda region alone, there are over 4,000 women engineers and technicians.

One hundred and thirty women are Deputies to the Supreme Soviet of the Kazakh republic, while twenty-two thousand are members of the local Soviets. The post of Minister of Social Welfare of the republic is held by the Kazakh woman B. Bultrakova.

Women school teachers and doctors number 40,000 and 6,000 respectively. Some 500 women have science degrees, including 70 Kazakh women. There are 12 women Doctors of Science and Professors in the republic.

The rapid industrial development is accompanied by an equally rapid growth of the towns. During the years of Soviet rule the urban population has increased more than six-fold and now constitutes 40 per cent of the population.

Before the Revolution most of the big towns were located along the borders. Nowadays

towns and industrial settlements have arisen in the central areas where natural conditions are much more difficult.

Altogether there are 41 towns and 141 industrial settlements. Whereas in 1920 Semipalatinsk, then the biggest town in Kazakhstan, had a population of about 45,000, by 1956 there were 16 towns each with a population in excess of 50,000, and two of these—Karaganda and Alma-Ata—had over 300,000 each.

Before the Revolution the Kazakh towns were, as a rule, administrative and trading centres; today they have numerous industrial enterprises.

In the past the urban population was mainly of Russian nationality (in the southern towns there were many Uzbeks). At present Kazakhs make up a large part of the urban population.

Considerable dwelling-house construction is under way. Last year some 28,000,000 sq. feet of dwelling space were built in the towns; in the rural areas 41,000 cottages were built.

Much has been done to improve the towns. In the old days not one of them had tramway lines, sewage system or laundries. Only Semipalatinsk had a piped-water supply. There were no paved streets, to say nothing of asphalt.



Cotton plantation at the Pakhta-Aral Experimental
Station of the All-Union Cotton Research Institute



Excellent grapes are grown in South and East Ka-

Nowadays, there are public utilities in all the towns and each has its own bus and trolley-bus lines.

The planting of greenery in the towns and industrial settlements, the creation of "green comfort" for the working people, is one of the most interesting features in socialist construction in Kazakhstan.

The pioneer role in this respect was played by Dossor oil-field settlement where a group of scientists led by Professor Dubyansky, aided by the workers of the "Embaneft" trust, laid out a pleasant shady park. For these localities, until then devoid of plant life, this was a remarkable development. In the past children in the oil-fields when reading about "trees," "leaves" and "rivers" found it hard to visualize the things that these words stood for. One can imagine what it meant to these children when they were able to play in the shade of trees and bathe in swimming pools.

The successful experience of bringing greenery to Dossor and the other oil-fields was taken up in Balkhash, Guryev, Karaganda and in other towns in the central areas of the republic. Botanical gardens, nurseries and hot-houses were set up in a number of places in the desert and semi-desert areas. For example, the

botanical gardens laid out in the desert about three miles from the town of Balkhash grow new varieties of fruit and ornamental shrubs adapted to the local soil and climatic conditions. Dozens of varieties of flowers are grown here. Balkhash has become a town of flowerbeds and shady trees. Nightingales are now annual visitors to Balkhash and Dossor.

Much has been done to ensure "green comfort" in the older towns in the steppe. The town of Uralsk can be taken as an example. In the past its streets presented a depressing picture. The writer Alexei Tolstoi who visited Uralsk in 1929 described it as a "god forsaken place . . . grey dust, flies, heat, with neither trees nor shrubs; the dust, carried by the wind, swirls in clouds around the squalid hovels. The railway station stands in an open space devoid of shade. The cab-driver takes us over a plain marked only by telegraph poles. Mud-huts line the wide roadway with drains in the middle; kiosks at the corners sell kvass and cigarettes. Hardly a soul is to be seen. This was once the capital of a rich territory, but today there is no sign of any attempt to adorn life, no amenities. A welter of ramshackle houses and in autumn a sea of mud. Towering above this squalor are enormous churches. There is nei-

ther water supply nor sewage. In recent years electric lighting has been installed in the centre. A makeshift boulevard, littered with empty tins, boasts a few stunted trees." With grim irony the writer spoke of the time "3,000 years from now when the partridge, curlew and heathcock would be domestic birds and Uralsk an elegant city...."

Fortunately, there was no need to wait so long. In 1940-41, channels were dug in the streets, getting their water from a pumping station, and trees and shrubs planted in great number. Uralsk grew into a modern town with abundant greenery. Delightful squares and parks were laid out. Trees and flowers were planted in the courtyards. Even in the factory grounds the eye is relieved with the flowerbeds and shrubs.

To appreciate the achievements of the Kazakh people and the growth of their material and cultural well-being, it is necessary to compare life today with what it was in pre-revolutionary times. In the past, the Kazakh spent both summer and winter in his felt yurt which was always filled with smoke and in which he never undressed during the cold months. Nor were conditions any better in the winter mud-huts. Nowadays the people live in ordinary

houses and electric light is common not only in the towns but also in rural localities.

In the past the Kazakh never used furniture or the ordinary household utensils. He sat on the floor, never had a bed to sleep on and ate without knife and fork, picking with his fingers from the common pot. Today, tables, chairs, beds, crockery, kitchen utensils and other items are the usual thing both in town and countryside. Almost every house has its radio set, gramophone and bicycle. Lace curtains adorn windows and there are cloths on the tables. The cleanliness of the rooms is something the nomad never dreamt about.

At first glance there is nothing striking about all this. And yet in the life of the Kazakh people these changes are the equivalent of a revolution.

In the old days the diet was extremely monotonous, consisting chiefly of milk products, mutton, horseflesh, and gruel made of flour or millet. It has now been enriched with courses previously unknown in the Kazakh aul. All kinds of vegetables and fruit find their way to the table to add to the traditional national dishes (*bishbarmak*, *baursak* and others).

The population has parted for ever with poverty and ignorance and has caught up with

the leading republics of the Soviet Union in economic and cultural development.

In tsarist times, Kazakhstan was incredibly backward culturally. Only 7.8 per cent of the population could read and write. And the greater part of this small number consisted of Russians and Ukrainians. Only about two per cent of the Kazakhs were able to read and sign their names, and these were mostly beys and mullahs. The overwhelming majority of the Kazakh working people was completely illiterate.

Teaching in those days was conducted in the Russian language; only in a very small number of schools were the children taught in the Kazakh language. In the 1914-15 school year the number of pupils totalled 105,000. At that time there was not a single higher educational establishment in the country.

Right from the first days of socialist Kazakhstan attention was focussed on public education. A network of schools and classes for abolishing illiteracy among adults was opened. In view of lack of Kazakh teachers in those days, abolition of illiteracy took a considerable time. The 1939 census revealed that over 76 per cent of the population was now

literate, and in subsequent years illiteracy was completely abolished.

In campaigning against illiteracy and for the introduction of universal education many deep-rooted prejudices had to be overcome; it was alleged, for example, that women needed no education, that it was harmful for them. Nowadays it would be difficult to find anyone in Kazakhstan who would deny the beneficial effect of education. "Ignorance is blindness" is a saying one often hears even among the old people.

Universal and compulsory 7-year education in the rural areas and compulsory 10-year education in the capital and in the regional centres were introduced in 1949.

By 1960 it is anticipated that universal secondary education will prevail in all localities, urban and rural. As is the case throughout the Soviet Union, education is free of charge.

In the 1956-57 school year there were 9,292 schools in the republic. Between now and 1960 another 760 seven-year schools and 400 ten-year schools will be built. Over-all enrolment of pupils in 1956 amounted to 1,294,000. Almost half of the pupils are girls—proof that the old prejudices about

education being harmful for women have been swept aside.

The children are taught in the native language. In addition to Kazakh and Russian schools, there are schools for Uzbeks, Uigurs, Dungans and Koreans. In 43 per cent of the schools the children are taught in the Russian language, while the language of the nationalities is used in the remainder. Of the nearly 70,000 teachers in the republic over 23,000 are Kazakhs.

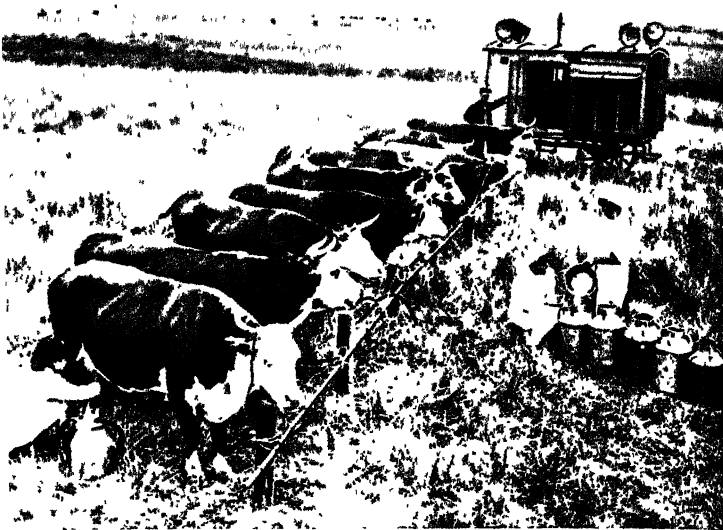
The school-teacher I. Kubeyev, who for more than 50 years has taught in a village school in the Kustanai region, compares the pre-revolutionary times with the present day: "The working population of the aul, crushed by poverty, never had the opportunity to study. Actually there was no such thing as a school building in the aul. After many requests to the bey we were given a dug-out which housed lambs and sheep. Twenty boys were taught here. No girl ever darkened the door. We had to visit the houses many times to talk parents into sending their children to school, but very few of them ventured to do so. Poverty forced them to send their boys and girls to work. The difference between the life of those times and today is like that between

night and day. The slum in which we taught the children of the poor has long since been pulled down. An elementary school was opened in the aul shortly after the Great October Socialist Revolution. We now have a secondary school which is one of the finest buildings in the aul. It accommodates 180 pupils. It was built with government funds and the classrooms, large, airy and comfortable, are excellently equipped."

Seasonal schools function on the distant pastures so that the children can continue their education without interruption.

Eight boarding schools were opened in 1956 in Karaganda, Chimkent, Guryev and other towns. In these schools preference is given to children whose parents, either because of the nature of their work, illness or for some other reason, are unable to ensure normal home-life for their children and also to the children of herdsmen who spend much time on the distant seasonal pastures. The children are accepted in these schools only at the request of the parents. They spend their vacations at home. Each of the boarding schools has from 50 to 60 acres of land which are used for training pupils to work in the field. In addition, there are workshops in





Electrical milking in the Karaganda region

Uigur girls of Charyn, Alma-Ata region



which they acquire the rudiments of industrial trades.

The Kazakh language belongs to the Turkic group of languages. It is akin to the languages spoken by the Kirghiz, Kara-Kalpaks, Uzbeks, Bashkirs and Tatars. Before the Revolution and during the first years of Soviet rule the old Arabic alphabet, which is very difficult and does not correspond to the structure of the Kazakh language, was used. The Latin alphabet was introduced in 1929.

In 1940, on a suggestion made by the Kazakh intelligentsia, the government of the republic decided to introduce a new alphabet, based on the Russian alphabet and adapted to the peculiarities of the Kazakh language. Its adoption facilitated the abolition of illiteracy and enabled the Kazakhs to become acquainted with the advanced Russian culture and the cultures of the other nations of the U.S.S.R., many of which use the Russian alphabet.

A wide network of specialized educational establishments trains specialists for industry, agriculture, transport, public health and public education. In the 1956-57 school year over 68,000 people (compared with 300 in 1914) studied in the 134 technical schools and other

specialized secondary educational establishments.

A big role in training skilled workers is played by the vocational schools for boys and girls. These establishments have excellent workshops. The pupils live in well-appointed dormitories. In 1955, some 26,000 boys and girls completed the vocational schools.

Twenty-five higher educational establishments train specialists in various branches of science and industry. Alma-Ata State University has faculties of history, philology, physics and mathematics, chemistry, soil biology, geology and geography, economics and law. In addition, there are mining-metallurgical and agricultural colleges, technical college for building materials, three medical colleges, two veterinary surgeon colleges and 13 teacher training colleges. Of the 55,000 students in the higher educational establishments 4,000 are Kazakh girls. The next few years will see the opening of another agricultural college and a building college. Many Kazakh boys and girls are studying in Moscow, Leningrad and other cities beyond the boundaries of their republic.

Numerous cultural establishments bring enlightenment and knowledge to the popula-

tion. In 1956 there were over 6,300 public libraries (compared with 139 in 1914) and about 3,060 cinema installations (compared with 20 in 1913). There are clubhouses in most rural villages, while big industrial towns like Karaganda, Guryev, Balkhash and Ust-Kamenogorsk have "palaces of culture."

Even the distant seasonal pastures far from the towns are not forgotten; there cultural work is conducted in what is known as "red yurtas." This name was coined many years ago when these cultural centres were actually accommodated in the yurtas or felt tents. Nowadays the "red yurtas" are frequently housed in excellent premises with library and reading rooms. Lectures, talks, public readings and amateur art concerts are held here.

The very outlook of the Kazakh people has changed as a result of the cultural revolution carried out in the republic during the years of Soviet rule. The one-time illiterate nomad herdsman has become a cultured citizen and a conscious builder of a new life.

The French journalist Michel Debonne after meeting with Kazakh scientists, artists and statesmen wrote: "These are highly cultured people, clever, hospitable, friendly and

courteous—children of nomads who could neither read nor write . . . the Revolution has taken them from the time of Genghis Khan to our days in less than half a century.”

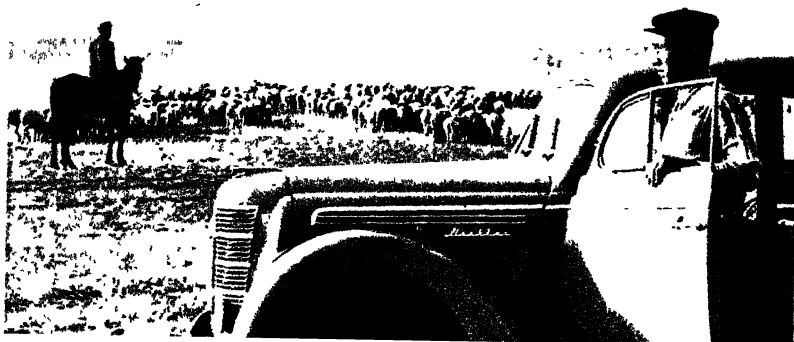
Science, literature and art have come into their own in Kazakhstan during Soviet times; they have become the property of the broad masses from whose ranks new talents are constantly appearing. The Kazakh author, Mukhtar Auezov, writes:

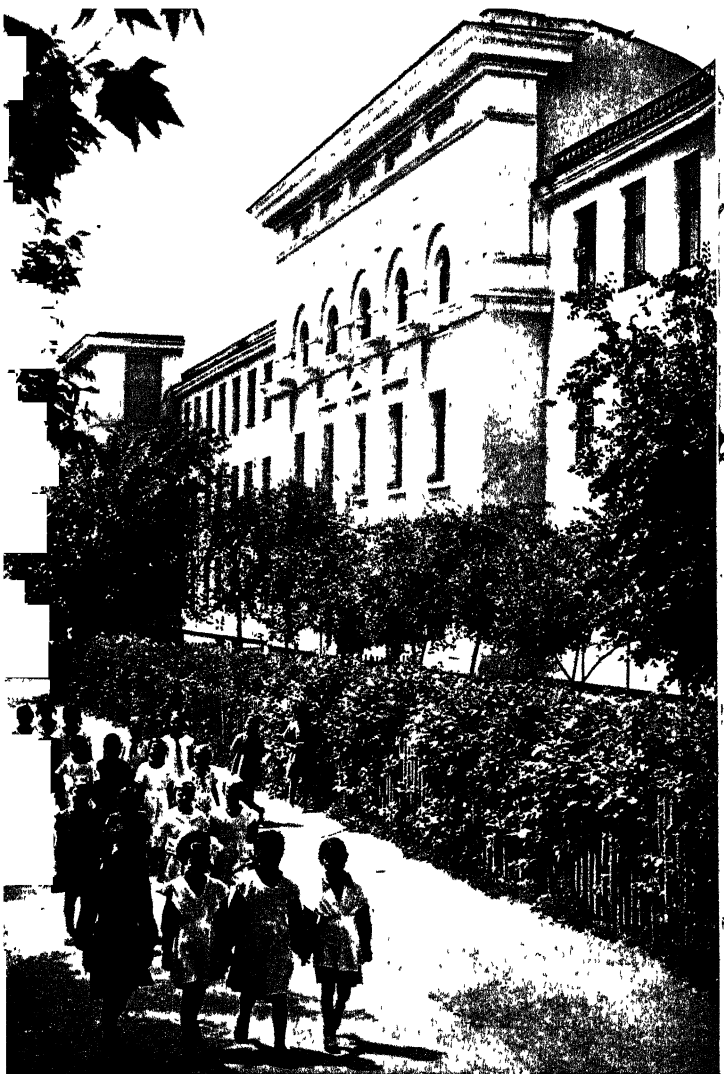
“The boy Kazakh who was born in a dilapidated felt tent and who roamed the steppe with the nomads is now an academician. The child, whose parents knew about the universe only from legend, is now, with prominent scientists as his tutors, absorbing modern knowledge in the sphere of astrophysics. People who before the October Revolution learnt as much mathematics as was needed to count their sheep, now have their own outstanding mathematicians. The Kazakh girl, who only a short time ago would have been given to the bey as the third wife, now holds the post of minister. The young herdsman, who a quarter of a century back herded the bey’s flocks in the Ala-Tau Mountains, is now an honoured artist and producer, a pupil of Stanislavsky. There is no need to continue



This large swimming-pool is a new feature of the town
of Kentau

Shepherd Nurpeisov of the Engels Collective Farm
(Kustanai region) setting out for the pasture in his
own car





—people such as these are not exceptional, they mirror the destiny of the nation as a whole. Only when the nation acquired a history did these people acquire a biography.”

The development of science in Kazakhstan is closely linked with the requirements of its economy.

It now has a numerous school of geologists who, aided by the Academy of Sciences of the U.S.S.R., the Ministry of Geology and Natural Wealth of the U.S.S.R., and other organizations, have uncovered the secrets of its hidden treasures. This has led to the establishment of a solid basis for non-ferrous and ferrous metallurgy, for the chemical, coal, oil, cement and other industries.

Kazakh scientists are investigating the hydropower resources of the rivers, soil and plant life and the climatic conditions of their republic. Specialists are studying the history of the people and their language, the economy of the republic, and so on.

However, Kazakh scientists do not confine themselves to local subjects. They are making their contribution to world science, elaborating problems of mathematics, physics, chemistry and economic theory and are engaged in major astronomical research. Kazakh

scholars have laid the foundations of a new science—astrobotanics. Under the leadership of Academician Fesenkoy, the process of star formation is being studied.

The Kazakh Academy of Sciences, the centre for scientific thought in the republic, comprises over 20 major research institutes, eight independent sectors, seven research stations, etc. All told, it has a staff of 800 scientific workers. Over 300 post-graduate students are working on theses for 120 subjects.

In 1956 the republic had 142 Doctors of Science and 1,792 people with the degree of Candidate of Science.

It will not be out of place to recall here that in pre-revolutionary times the sole scientific establishment on the territory of Kazakhstan was the Semipalatinsk department of the West-Siberian branch of the Russian Geographical Society, which had exceedingly modest scientific forces and material means at its disposal.

All the main branches of modern science are represented in the Kazakh Academy. Its biggest research establishment is the Geological Institute, engaged in exploring the natural resources of the republic. It sends out dozens of expeditions every year. The Acad-

emy's research establishments study problems of mining, ore-concentration, metallurgy, building and building materials, soil formation, desert life, botany, experimental biology, physiology, zoology, clinical and experimental surgery, astrophysics, physics, chemistry, electric power, economics, history, archaeology and ethnography, language and literature, etc. An oriental sector studies the Uigur and Dungan cultures.

The Kazakh branch of the All-Union Academy of Agriculture comprises research institutes for crop-raising, animal husbandry, fodder and pastures, mechanization and electrification of agriculture, veterinary service and an experimental bee-keeping station.

Alma-Ata houses a branch of the All-Union Institute of Minerals, the Kazakh Water Supply Research Institute and the Grain Institute. There are agricultural experimental stations and a broad network of experimental fields and sectors in 13 regions of the republic. In this way agricultural science is closely linked with practice. The institutes have contributed much that is new to the crop-raising and animal husbandry. They are developing new breeds of cattle, new varieties of wheat and new methods for conquering the desert.

Considerable research work is also carried out by the higher educational establishments and in the industrial enterprises.

The first Kazakh scholar Chokan Valikhanov, was an outstanding enlightener of the XIXth century (1837-1865). Valikhanov studied the history, geography, economy and ethnography of his native country, Central Asia and Sinkiang. At the age of 20 he was elected a member of the Russian Geographical Society. This is what Academician Veselovsky wrote about this talented man: "Like a brilliant meteor this scion of the Kirghiz khans, who became an officer in the Russian army, flashed across the fields of oriental learning. Russian orientalists unanimously recognized in his person a phenomenal figure and anticipated from him great and important discoveries concerning the Turkic peoples. Alas, an untimely death deprived us of these hopes."

The Kazakhstan of today has advanced a long way from the times when only isolated brilliant scholars emerged from the ranks of the people. In 1955, 1,172 Kazakhs were working in different branches of science in the republic. Of the 57 members of the Kazakh Academy of Sciences 20 are Kazakhs.

The Academy is headed by the famous

geologist Academician Satpayev. Satpayev was born into a Kazakh nomad family. In the 20's and 30's he headed exploration work in the Dzhezkazgan and other copper deposits in Central Kazakhstan. His study of the Dzhezkazgan ore-field enabled him to make a number of deductions about the location of the seams, with the result that the old concepts concerning the deposits were revised. In point of fact, Dzhezkazgan, as an ore-field of world importance, was discovered by Satpayev. His theoretical conclusions were drawn upon in exploring the other deposits of copper ores. Satpayev has more than a hundred scientific works to his credit.

Year by year Kazakh scientists are widening their international contacts, exchanging scientific works and information with scientists in China, Poland, Czechoslovakia, Hungary, the German Democratic Republic, Britain, France, the United States and other countries.

The folk art of the Kazakh people is traditional. Minstrels, known as *akyns*, have from earliest times expressed the thoughts, aspirations and dreams of the people for a better life, have glorified the national heroes and subjected to scorn and ridicule the mean and the evil. The popular epics *Yer-Targyn*, *Kozy*

Korpesh and Bayan Slu, Aiman Sholpan and Kyz-Zhibek are well known.

Abai Kunanbayev (1845-1904), poet and enlightener, founded the modern Kazakh literature. Kunanbayev's democratic poetry, which truthfully portrays the life of his people, was at first transmitted only orally. His poems were published posthumously in 1909. He wrote many lyrics, satires and philosophical poems and also the epics *Masgud*, *The Tale of Azim* and *Iskander*. He translated into Kazakh poems by Pushkin, Lermontov, Krylov and other Russian classics. His best-known translation is of Pushkin's *Evgeny Onegin* and his translation of "Tatyana's Letter," for which he wrote the music, became a popular Kazakh song.

Thoughts about the destinies of his people, about education and enlightenment were set forth by Abai in his *Edification*. With bitterness he wrote that the Kazakhs lagged behind the advanced nations and lived in a state of barbarism. "We have no towns nor people who see the outside world. Surely we are not fated to remain the most insignificant among the nations of the world." Abai devoted himself to awakening national consciousness amongst his people, transmitting to them the advanced

ideas of democratic Russian culture. "The Russians see the world," he wrote, "if you know their language the world will open up to you too."

The poet and teacher Ibrai Altynsarin (1841-1889), who in 1879 published a children's reader, did much to shape the literary language.

Kazakh literature has blossomed luxuriantly during the years of Soviet rule. The minstrel Dzhabbul Dzhabayev (1846-1945), one of the greatest Kazakh poets, combined in his work the best traditions of oral poetry and the new socialist Kazakh literature. His songs enjoyed great popularity not only in Kazakhstan but throughout the Soviet Union and beyond its boundaries. Amongst his best-known works are *My Country*, *The Song of the Fraternity of the Peoples*, *Song of Moscow*, *Leningraders*, *My Children*, *Utegen-Batyr*, *On the Death of a Son*.

The writers Sabit Mukanov (author of the novels *Botagoz*, *Syr-Darya* and the poem *Sulushash*), Mukhtar Auezov (author of *Abai*, *Abai's Road*), Gabiden Mustafin (author of *Karaganda*, *Millionaire*, *Chaganak Bersiyev*), Gabit Musrepov (author of *Soldier from Kazakhstan* and the *Awakened Territory*) and

others, are also known beyond the borders of the republic. Their works have been translated into the languages of the peoples of the Soviet Union and also into Chinese, Czech, Hungarian and Bulgarian.

In turn, the literature of the other nations—Russian, Ukrainian, Uzbek, Chinese, Czech, German and English has been translated into the Kazakh language. Kazakhs can now read Russian and world classics and works by modern authors in their native language.

The theatre in Kazakhstan is a product of Soviet times—the first theatre having been opened in Kzyl-Orda in 1926. At present there are 20 theatres in the republic, most of them performing in the native language. Programmes include plays by Kazakh authors (*Amangeldi* by Musrepov, *Kara Kipchak Koblandi* and *Abai* by Auezov, *Friendship and Love* by Abishev, *Spring Breezes* by Khusainov, *Flower, ye Steppes* by Tadjibayev, etc.), as well as plays by Soviet authors and the classics of Russian and world dramaturgy.

The State Opera House in Alma-Āta performs in the Kazakh language such classics as Chaikovsky's *Evgeny Onegin*, Puccini's *Madame Butterfly*, Bizet's *Carmen*, Dargomyzh-

sky's *The Mermaid* and others, and also operas by Kazakh composers.

Kazakh national opera had its origin in the wealth of national song. The operas *Birdjan and Sara* by M. Tulebayev, *Abai* by A. Zhubanov and L. Khamidi, *Kuz-Zhibek*, *Yer-Targyn*, *Dudarai* by E. Brusilovsky are great favourites with the theatre-going public. Kazakh opera, distinguished for its originality and its profoundly popular nature, is at the same time, not a whit behind modern musical standards.

The republic has produced many talented actors and actresses.

Kazakh music has achieved considerable success. Apart from the above-mentioned operas widely known are the Cantata *Soviet Kazakhstan* by Brusilovsky, the symphonic poem *Rizvangul* by Kuzhamyarov, the symphonic play *Land of Joy* by Mukhamedjanov, and the choral works of Baikadamov, Tulebayev and Zhubanova.

The Kazakhs have their own national musical instruments, which include the *dombra* and *kobiz*, string instruments, and the *sibizga*, a wooden flute.

A State Conservatory has been functioning in Alma-Ata for more than ten years and there are music schools in a number of towns.

The orchestra of national instruments named after the famous dombra player Sagyrbayev enjoys great popularity in the republic. Equally known are the Kazakh national choir and the state song and dance ensemble.

The foundations of Kazakh cinematography have been laid by the Alma-Ata Film Studio. Audiences in Kazakhstan and other republics are acquainted with the films *Dzhambul*, *Abai*, *The Girl-Rider*, *The Poem About Love* and *Daughter of the Steppe*.

The Kazakhs have long been famous for their ornamental work. Their matting, carpets, dresses and wood utensils are gaily decorated. The main elements used in the ornamentation are rams' horns, wolves' ears, bird beaks, leaves, etc.

Kazakh life and customs are reflected in numerous pictures by the Russian painter Khلودov.

Nowadays the Kazakhs have their own painters. One of the best known of them, Abil-khan Kasteyev, started his life as a shepherd. Kasteyev's themes are the Kazakh landscape and the history and life of his people.

The more than 20 museums in the republic are centres of culture and enlightenment. In 1955 they were visited by over 400,000 people.

The culture of the other peoples inhabiting the republic is blossoming too. Uigur art, for example, has many achievements to its credit. The Uigur theatre in the Alma-Ata region stages plays based on the life of the Uigur people and also translations of Kazakh, Russian and Uzbek plays. The first Uigur opera *Nazugum* by Kuzhamyarov, with its plot based on an Uigur fairy-tale and its music built on folk melodies, was performed by the theatre in 1956.

A regional Korean theatre is extremely popular with the Korean population.

The work of spreading culture, scientific and political knowledge is furthered by newspapers, journals and book publishing—all developments of Soviet times.

Books, newspapers and journals are published in the Kazakh, Russian, Uzbek, Uigur and Korean languages. Altogether Kazakhstan has 380 newspapers and 87 journals (22 of them in Kazakh).

In 1956 something like 1,450 books totaling 15 million copies were published, half of them in the Kazakh language.

In tsarist times the public health service was at the lowest possible level, especially in the auls. In fact, the nomad and semi-nomad pop-

ulation were deprived of medical help altogether. When they became ill, they had recourse of folk remedies, or else the role of doctor was taken by the ignorant sorcerer who invoked "magic" to drive out the "evil spirit."

Even in the Russian and Cossack settlements the medical service was extremely poor, particularly in the rural areas. Throughout the vast territory of Kazakhstan there were only 244 doctors in 1913, and most of these lived in the towns. On the average there was one doctor for every 25,000 of the population, and one hospital bed for every 3,300. It was not surprising, therefore, that the death-rate, especially infantile mortality, was exceedingly high. Epidemic and "social" diseases such as small-pox, malaria, syphilis, trachoma and dysentery were widespread. From time to time there were outbreaks of cholera and plague.

During the years of Soviet rule much has been done to inculcate hygiene among the population and establish a network of health centres from which to combat disease.

By the end of 1956 there were 10,400 doctors in the republic: one doctor for about 817 residents. There is now a network of

clinics, first-aid stations, hospitals and chemist shops. The number of hospital beds by the end of 1956 amounted to 60,900, i.e., one for every 140 persons.

The main centres of malaria have been wiped out thanks to the work done by the anti-malaria stations and the systematic destruction of the mosquito breeding places. Compulsory vaccination has resulted in the disappearance of small-pox, formerly the curse of the Kazakh aul.

A network of canteens and restaurants is under strict medical observation. In the industrial enterprises, especially those injurious to health and in mine workings, medical personnel supervise observation of hygiene rules.

The public health service is free of charge.

The 940 kindergartens in the republic accommodate 48,000 children. Most babies are born in maternity homes under the supervision of midwives and doctors.

For the working people there are numerous sanatoriums and rest homes. In the seven health resorts of the republic there are 45 sanatoriums with accommodation for 7,000 and 26 rest homes accommodating 3,000 people.

The mud treatment resort at Alma-Arasan is located in a picturesque gorge in Zailiisky

Alatau at nearly 6,000 feet above sea level. Another mud resort, Arasan-Kapal, is in the Taldy-Kurgan region.

The mud treatment centres Yany-Kurgan (Kzyl-Orda region) and Muyaldy (Pavlodar region) use the medicinal salts found in lakes Teresken and Muyaldy.

Borovoye, a climatic and kumys* treatment resort, located in the Kokchetav Mountains, amid lakes and pine woods, and famous for the beauty of its surroundings, is designed for tubercular patients. Aul, in the Semipalatinsk region, is another kumys treatment centre.

In the Alma-Ata region there is the climatic resort known as Kamenskoye Plateau, located in the Zailiisky Alatau Hills at a height of 4,000 feet.

Kazakhstan with its variety of climatic conditions and numerous mineral springs has great possibilities for extending its health resorts.

In addition to undergoing treatment in local health resorts, many working people travel to the Crimea, Caucasus and other resorts of the Soviet Union.

* Mare's milk, specially processed.

KAZAKHSTAN'S DISTRICTS AND PRINCIPAL TOWNS

In order to get a better idea of the Kazakh republic, it is necessary to take a closer look at the separate areas, each of which has its own natural conditions and economic life. Kazakhstan can be divided into five districts: southern, central, northern, eastern and western. The division, of course, is an arbitrary one, but it will enable us to get an idea of the separate parts of the republic and their peculiarities.

From the standpoint of economic development and density of population Southern and Northern Kazakhstan are the most important.

SOUTHERN KAZAKHSTAN

Southern Kazakhstan extends from the Aral Sea to the border of China and takes in the southern and south-eastern part of the republic. It comprises the Alma-Ata, Taldy-Kurgan, Dzhambul, South-Kazakhstan (capital Chimkent) and the Kzyl-Orda regions. About a third of the population and nearly a third of the industry are located here.

This part bears the imprint of its southerly location and its neighbourship with the Uzbek and Kirghiz republics. The combination of desert and oases in the river valleys and foothills, the high Tien-Shan Mountain Range topped with glaciers, the dominance of irrigated cultivation and the growing of heat-loving crops such as cotton and rice—these are the features of the nature and economy of Southern Kazakhstan.

The river system of the area owes its existence chiefly to the Tien-Shan Range, where there is fairly considerable rainfall. Small streams and large rivers flow from the slopes of the Tien-Shan Range in a northerly and north-western direction. But not one of them reaches the ocean. Some of the rivers, for instance the Chu and Talas, gradually peter out in the deserts, while others, including the Syr-Darya and Ili with their tributaries Karatal and Lepsa, take their waters to the Aral Sea and Lake Balkhash, which have no flow and, in fact, are vast overflows of the lower reaches of the rivers emptying into them.

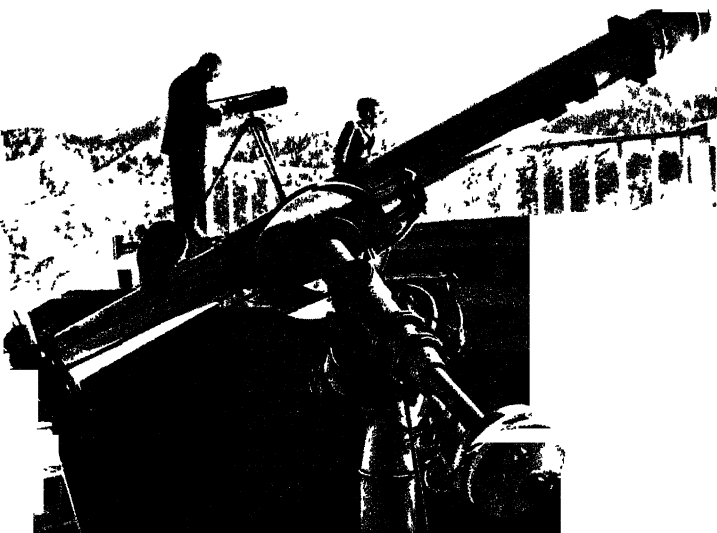
The rivers and streams flowing from the Tien-Shan slake the thirst of the fields of Southern Kazakhstan and make it possible to grow cotton and rice.



Carpentry class in a secondary school

Hospital in Alma-Ata





Observatory of the Astrophysical Institute of the
Kazakh Academy of Sciences, Alma-Ata

Summer theatre in Karaganda



The Syr-Darya, the most powerful of these rivers, rises beyond the boundaries of the Kazakh republic in the mountains of Kirghizia. Only in its middle reaches, in the area of the Hungry Steppe, does it enter into Kazakhstan. The Syr-Darya waters irrigate the Hungry Steppe and have transformed a large stretch of desert into a blossoming oasis divided by the border between the two republics—Kazakhstan and Uzbekistan. This is the main cotton-growing area of Kazakhstan. Protected against the cold winds from the north and north-east by the mountains of the Karatau Range, this corner of Kazakhstan, together with the areas around Chimkent and Turkestan,* has the most favourable conditions for heat-loving crops, fruit-raising, wine-growing and silk-worm breeding.

The first small irrigation canal providing water for some 87,500 acres, was built in the Hungry Steppe in tsarist times; however, the full utilization of the river dates only from the years of Soviet rule. As early as May 1918, Lenin signed a decree allocating

* It is necessary to distinguish the town of Turkestan, located in Southern Kazakhstan in the valley of the Syr-Darya, from the geographic name Turkestan in the sense of "Central Asia"

50 million rubles for irrigation in Central Asia, including the Hungry Steppe. During the years of Soviet rule, something like 500 thousand acres have been brought under cultivation in the Hungry Steppe on the territory of the two republics.

In 1924 a large state farm known as the Pakhta-Aral* was set up on the Kazakh part of this territory. Actually, this was the first island of cotton in the formerly lifeless desert. This state farm is now famous for its high and steady yields, which average about 2,670 pounds per acre from a crop area of 12,000 acres. The farm has a huge sprinkler system for watering purposes. Crop gathering is mechanized. In 1956 some 240 cotton-picking machines worked on its fields. Aeroplanes are used to sprinkle the cotton plants with a mixture which strips the leaves before the gathering begins. In addition to cotton fields, Pakhta-Aral has vast vineyards and orchards. About 1,000 head of cattle and over 20,000 sheep graze on its pastures. Besides Pakhta-Aral, there are in the Kazakh part of the Hungry Steppe four more cotton-growing state farms and 69 collective farms.

* *Pakhta-Aral*, means the Cotton Island

Over-all length of irrigation channels in the Kazakh part of the Hungry Steppe exceeds 4,350 miles. The main canal, known as the Kirov Canal, is nearly 80 miles long.

With a view to increasing the cotton crop the Central Committee of the Communist Party of the Soviet Union and the Council of Ministers of the U.S.S.R. have decided to irrigate and bring under cultivation virgin land in the Hungry Steppe. By cultivating new land and extending the irrigation installations, it is planned to extend the watered area by 750,000 acres (of which 250,000 will be on the territory of Kazakhstan). The newly irrigated lands are expected to yield (in the two republics together) up to 340,000 tons of cotton.

In view of the fact that sub-soil salt water lies close to the surface here and threatens the soil, a powerful drainage collector system will take it away.

Along the middle and lower reaches of the Syr-Darya, there is a narrow belt of irrigated land sown to cotton, rice and other cultures. This belt extends to the district town of Kazalinsk. The Kzyl-Tu, Vanguard, Gigant and other collective farms in the Kzyl-Orda region are renowned for their excellent rice crops.

At present considerable work is under way in the vicinity of the town of Kzyl-Orda to extend the irrigated area. In 1956 the Syr-Darya was dammed near the Tas-Bugel settlement. Construction of the Kzyl-Orda hydroelectric scheme will result in the irrigation of another 300,000 acres.

In the neighbourhood of the towns of Chimkent and Turkestan work is in progress on the Arys-Turkestan canal, which will take the water of the Arys—a tributary of the Syr-Darya—and other streams in this area, to the cotton fields. This canal, 122 miles long, will irrigate nearly 300,000 acres of arid land.

To the east of Karatau the foothills of the Tien-Shan are open to the north with the result that climatic conditions are less favourable for cotton-growing. The chief crops here are grain and melons, sugar-beet, tobacco, and the opium poppy. Much fruit is grown and there are vineyards in sheltered places.

The environs of the town of Dzhambul are watered by the River Talas. The districts to the east are watered by the Chu, the main irrigation installations of which are located in the neighbouring Kirghiz republic. The neighbour-

hood of the city of Alma-Ata is irrigated by the small streams which flow into the River Ili. So far the abundant waters of the Ili have not been fully used. The Kapchagai hydroelectric station, about 40 miles north of Alma-Ata, to be built shortly, will make it possible to extend the irrigated area in the vicinity of the capital to over 1,000,000 acres. At the moment the streams of the Ili system supply water for 600,000 acres.

The River Karatal, which empties into Lake Balkhash, is widely used for irrigation purposes. Its valley is renowned for rice-growing. Carp are also bred in these rice fields. The carp feed on the pests and in searching for food disturb the sediment, thereby improving the regime for the plants and enhancing the crop yield.

The hills of Southern Kazakhstan are the main areas of summer pastures whither the sheep are driven in spring after wintering in the sandy deserts and in the river valleys. The alpine pastures are extremely nourishing; the sheep find more abundant food here than anywhere else.

The high mountain ranges along the southern borders of Kazakhstan, which are of later formation, are relatively poor in minerals.

The Dzhungarsky Alatau and especially the Karatau Range are much richer in complex ores and other mineral wealth.

Southern Kazakhstan has few local sources of fuel. The coal deposits at Lenger and Keltemashat satisfy only part of the local needs. Consequently, large quantities of Karaganda coal are brought in. It is hoped that the discovery in 1956 of gas deposits in the mountains east of Alma-Ata (in the Kegen district) will improve the fuel situation in the area of the capital.

Ten power stations have been built on the mountain streams Bolshaya Almaatinka and Malaya Almaatinka. The biggest of these—Ozernaya—located at a height of 6,600 feet, has a capacity of 18,000 kw. Dams formerly built on the Syr-Darya for irrigation purposes will now be used in building power stations. Construction of the Kapchagai station on the River Ili, the first major hydroelectric scheme in Southern Kazakhstan, will greatly improve the electricity supply of the capital and neighbouring districts.

The desert plains to the north and west of the mountain ranges are excellent winter pastures. Of these the most valuable are the Sary-Ishyk-Otrau plain and the winter graz-

ing grounds in the valley of the River Chu. In the summer months the pastures in the Chu valley are hardly used because of the terrible heat and the swarms of gadflies and mosquitoes.

Southern Kazakhstan holds first place in the republic for fine-fleeced sheep farming; karakul sheep are also bred here, mainly in the basin of the Syr-Darya.

The location of industry and agriculture in the south has determined the nature of its transport system. The rail network is something like a trident having as its base the line linking the two main industrial centres—Alma-Ata and Chimkent. The first “prong” heads in a north-westerly direction, running from Chimkent along the Syr-Darya towards the European part of the U.S.S.R. The second “prong”—in the east—goes from Alma-Ata to the north-east in the direction of the Altai territory and Kuzbas. The third, middle “prong,” runs northward from Brlik station to Karaganda. Minor branch lines lead from the main railways to the principal mineral deposits. Shipping on the Aral Sea, Lake Balkhash and the rivers Ili and Syr-Darya caters chiefly to local trade.

The chief city in the south is Alma-Ata,* capital of the republic. It is the second largest city in Kazakhstan (330,000 population) after Karaganda. In the year 1854, on the site where Alma-Ata now stands, Russians erected a fortress which later grew into the town of Verny. Before the Revolution Verny was a god-forsaken place having no industry of its own and no rail communication. Renamed Alma-Ata in 1921, it became the capital in 1929.

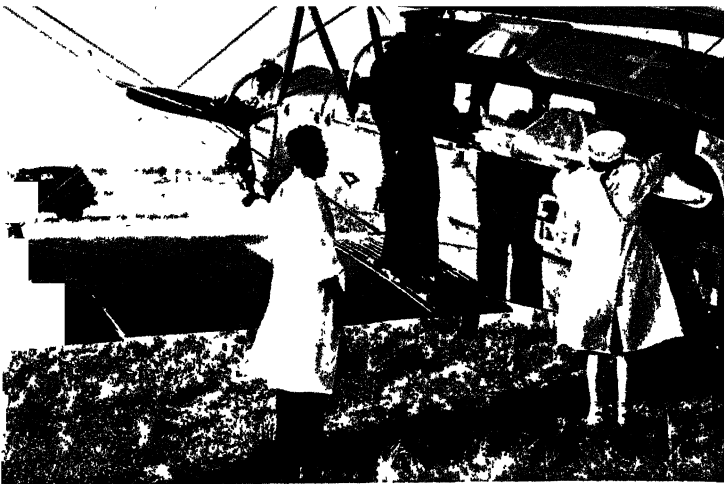
Natural conditions in the Alma-Ata area are extremely varied. The city is located in the foothills of the Zailiisky Alatau at the height of 2,700 feet. The massive mountains, which rise to the south of the densely populated and highly developed Alma-Ata foothill belt, form a sharp natural border, separating it from the neighbouring Kirghiz republic. Communication with its neighbours is maintained by a circular route around the Zailiisky Alatau Range.

The vast plain of the southern districts of

* Alma-Ata—a distortion of the Kazakh name "Almaty" which means "the town of apples" The name is derived from the woods of wild apple-trees which grow in the vicinity.



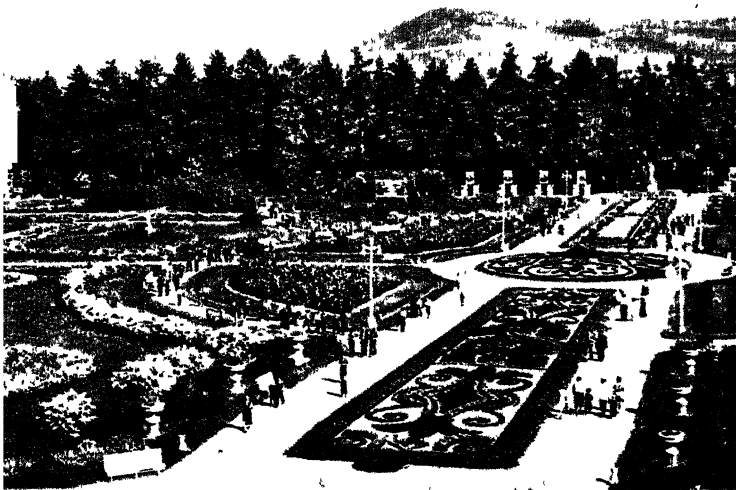
Members of the Kazakh State Folk Song and Dance



Planes are used to bring patients to the hospital from
far-away state grain farms

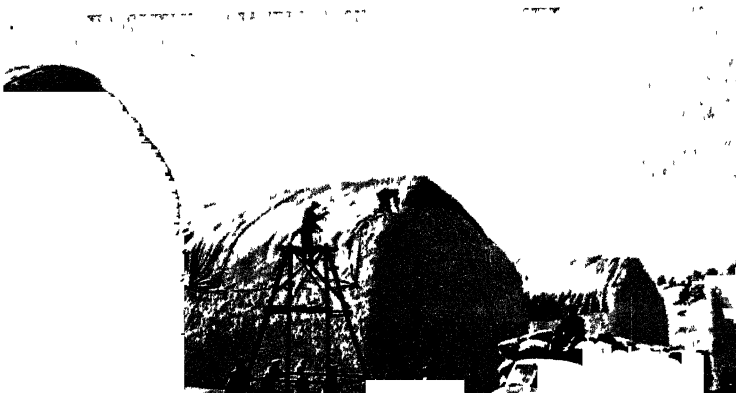
A girl receives medical aid at the Hospital of the Ka-
lininsky State Grain Farm, Akmolinsk region

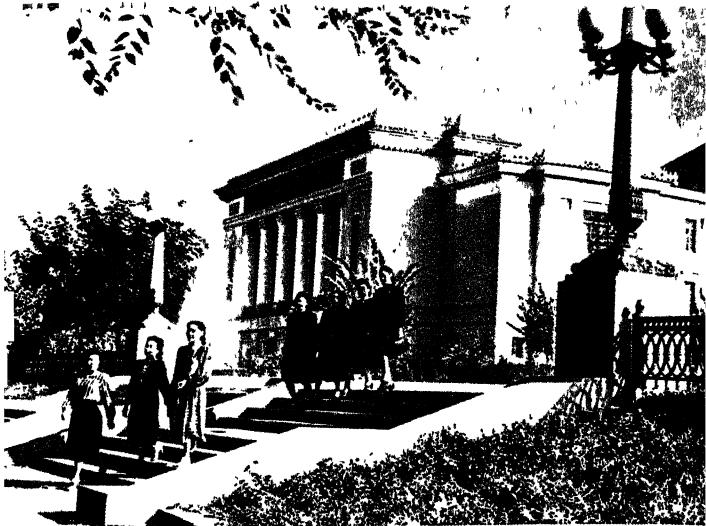




Recreation park in Alma-Ata

Pakhta-Aral State Farm Bringing in the cotton





The Abai Opera House in Alma-Ata

Apple orchard in bloom



Balkhash, which verge on the Alma-Ata area from north-west, are clay or sandy semi-desert covered with saksaul. It is practically uninhabited and is used chiefly as a seasonal pasture.

These areas are in sharp contrast to the foothill zone of concentrated industry and agriculture. Climate and soil conditions here favour crop-raising, especially on irrigated lands. Abundance of sunlight (there are only 68-85 cloudy days a year) and heat makes it possible to grow grapes, tobacco and sugar-beet.

Annual rainfall ranges from 350 to 600 millimetres. Chernozem (black earth) and dark chestnut soils predominate.

The rivers flowing from the Zailiisky Alatau are fed in summer by the melting snows and glaciers and by the rains falling in the hills. Consequently, during the hot season, when considerable quantities of water are needed for the fields, gardens and orchards, these rivers are intensively used for irrigation purposes. The mountain stream Bolshaya Almaatinka is the main source of drinking water for Alma-Ata.

Sometimes, after heavy rainfall in the Zailiisky Alatau, vast quantities of rock and silt

are swept down by the roaring torrents. The rivers often overflow their banks and threaten the neighbouring villages. Alma-Ata, situated at the point where the two Almaatinkas, Bolshaya and Malaya, emerge from the hills, sometimes finds itself endangered by the swirling waters.

In 1921, on the night of July 8, after a severe rain-storm in the mountains, the Malaya Almaatinka overflowed its banks and inundated the city. The raging torrent carried down from the hills above three million tons of boulders and silt; some of the boulders weighed up to 25 tons. The town was severely damaged. Buildings were swept away, a flour mill was completely buried in gravel and silt and many lives were lost. More recently, on August 7, 1956, as a result of intensive thawing of ice in the mountains, caused by unusually high temperatures and heavy rainfall, the Malaya Almaatinka burst its banks and Alma-Ata was threatened with another disaster. However, thanks to the efforts of the population, the danger was averted.

Earthquake tremors are frequent in the Alma-Ata area. For this reason anti-seismological methods of construction have been adopted in order to safeguard buildings. The

most destructive earthquakes here took place in 1887 and in 1911

Alma-Ata is a big centre of industry, specializing chiefly in machine-building and light industry. The products of its factories are known throughout the Kazakh republic and especially in its southern areas. The city has large machine-building and electro-technical plants, weaving mills, knit good factories, footwear and fur factories, two clothing mills, furniture, tobacco and confectionary-biscuit factories, tanneries, harness-making, meat-packing, flour mills and a printing works. Enterprises scheduled for construction in the coming years include textile mills and a carpet-making factory.

The city is surrounded by orchards and vineyards. The renowned Luch Vostoka Collective Farm has over 1,500 acres of orchards and vineyards. Alma-Ata apples, large and delightful to look at, are famous for taste and fragrance. High quality champagne is made from the local grapes.

In addition to the orchards, dense woods of wild apples and apricots grow in the river valleys and on the hillsides.

Alma-Ata is the chief seat of learning in the republic. It houses the Kazakh Academy

of Sciences and 12 higher educational establishments, including the State University.

Above the city, at a height of 5,000 feet, stands the Institute of Astrophysics. Cloudless nights and transparent air provide excellent conditions for its work. Still higher, in the vicinity of the Bolshoye Alma-Ata lake, at 8,700 feet, there is a high-altitude observatory for studying solar physics.

The city is delightfully situated. The Zailiisky Alatau Range, its peaks covered with eternal snow, is a majestic sight. There are picturesque suburban retreats dotted with rest-homes and sanatoriums. The city is buried in greenery; the Gorky Recreation Park, which has a miniature zoo and a children's railroad, is one of the most beautiful places in Alma-Ata. Doctor Hewlett Johnson, Dean of Canterbury, who visited Alma-Ata in 1956, described it as a charming place, the greenest city in the world. There are trees on every street, masses of flowers and gurgling canals. The new buildings, wrote the Dean, are beautiful and magnificent, and their planning is superb. Prime Minister Nehru of India has compared Alma-Ata with his native Kashmir.

The city has changed beyond recognition

during the years of Soviet power. There are numerous bus and trolley-bus routes. Beautiful buildings of modern design line the streets. It has a piped water supply, sewage and asphalted streets. Its amenities include three theatres, an opera house and television centre.

The second largest town in Southern Kazakhstan—Chimkent—has a population of 130,000. Chimkent existed long before Kazakhstan united with Russia. Its geographical position—at the junction of two areas, one inhabited by Uzbek crop-growers and the other by nomad Kazakh herdsmen, in the vicinity of such important centres in Central Asia as Tashkent and the Ferghana Valley, on the trade routes linking Central Asia with Russia and Western China—contributed to the growth of trade and handicraft industry.

In Soviet times Chimkent has acquired importance thanks to its proximity to the Karatau complex ores, which gave rise to the non-ferrous metallurgy.

This, together with the growth of other industries, has transformed the small trading-handicraft town, which as late as 1920 had less than 15,000 inhabitants, into a major industrial centre.

It is the biggest lead-producer in the U.S.S.R. By-products of the Chimkent plant include silver, antimony and bismuth.

The town is located in the main cotton-growing area of the Kazakh republic and has a number of cotton-mills, ginnery and an oil and soap factory. Karakul skins are processed in a special factory.

The variety of plant life in Southern Kazakhstan has made it a centre for the chemico-pharmaceutical industry. Here, in the southwestern foothills of the Karatau Range, between the towns of Turkestan and Chimkent, is the only place in the world where *santonica* grows on an area of 4-5 thousand sq. miles. As early as 1885 a santolin plant was built in Chimkent for processing the *santonica* flowers. Its products were sent to Russia and to the world market. It has now been replaced by a large chemico-pharmaceutical plant. Another wild plant which is used as raw material is the semi-shrub *Anabasis*, which grows in the Syr-Darya basin. It is used for making poisons for combatting agricultural pests. The different varieties of *Ephedra*, which grow in the Karatau Mountains and in the foothills, are used for making ephedrine.

The machine-building industry in Chimkent dates from the years of the Great Patriotic War. The large forge and press equipment factory turns out first-class automatic presses. At the moment, a cement factory is under construction in the town. A hydrolysis works, bed-making, footwear and clothing factories, glass-making and a meat-packing plant are among the new enterprises shortly to be completed.

Like Alma-Ata, Chimkent is an important cultural centre. It has a technological institute, five technical schools and other educational establishments. Its amenities include a theatre and six well laid-out parks.

Closely linked with Chimkent are the nearby towns of Kentau, Achisai and Lenger.

Kentau and Achisai supply ores to the Chimkent lead plant, while Lenger supplies Chimkent and other southern towns with coal. There are also tile and brick factories and lime-kilns using local fire-clay and limestone.

Dzhambul, named after the national bard of Kazakhstan, is situated on the other side of the Karatau Range, in the valley of the River Talas. The town, which is very old, was formerly known as Aulie-Ata.

The waters of the Talas are used extensively for irrigation.

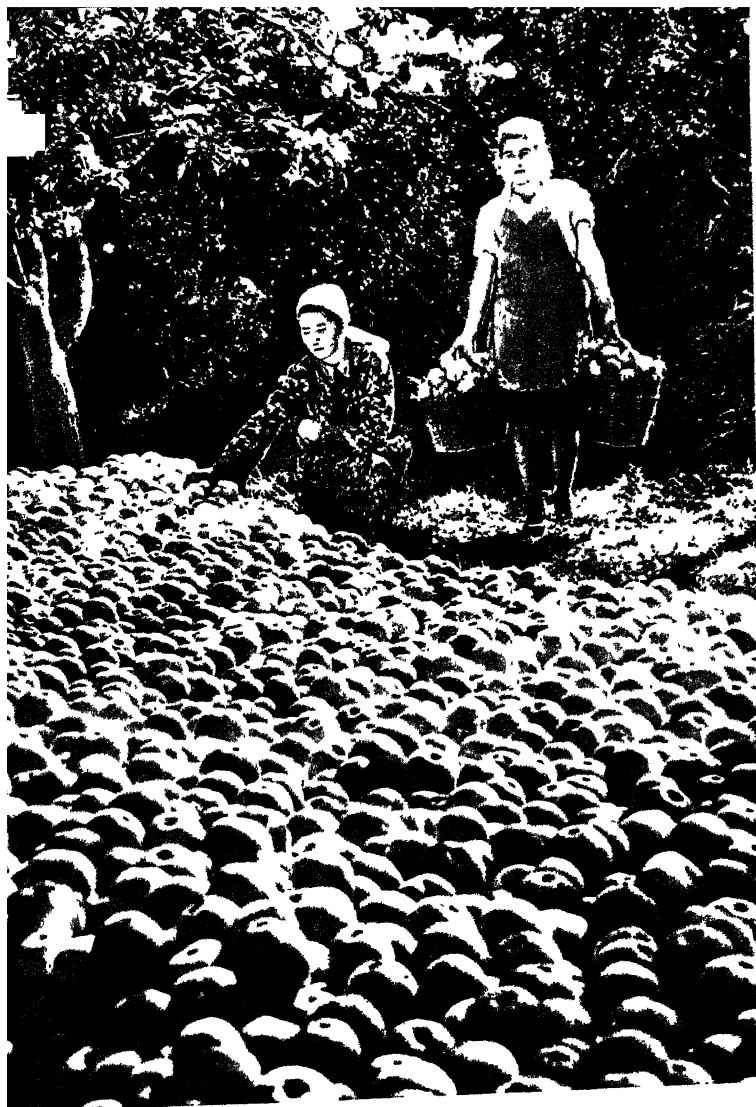
Food industry enterprises, tanneries, boot-and-shoe and chemical factories are found in Dzhambul. Of the food industry undertakings the biggest are the sugar refinery and the distillery. The waste of the sugar refinery supplies the main raw material for making spirits. The tanneries and boot-and-shoe factories are of recent origin, dating from the construction of the biggest tannery-footwear factory in Kazakhstan. Of the heavy industry plants in Dzhambul, the most important is the superphosphates factory based on the phosphorite deposits in the Karatau Mountains.

During the current five-year plan another factory for production of phosphates, a large woollen mill and a meat-packing plant will be built.

Fifty-six miles away from Dzhambul and linked to it by railway is the town of Chulak-Tau, where phosphorites are extracted.

To the north-west of Chimkent, on the railway line running towards the European part of the U.S.S.R., are the towns of Turkestan, Kzyl-Orda and Aralsk.

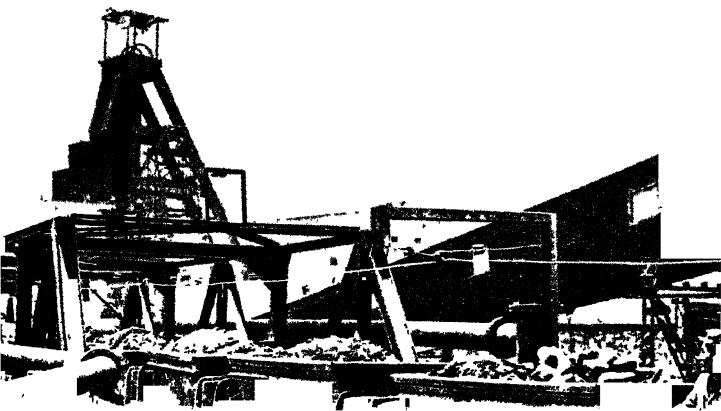
Turkestan is a very old town, dating from before the time of Timur. Among the ancient





Theatre Square in the new town of Kentau, centre of the complex ore deposits area

The Mirgalımsai lead and zinc mine in Kentau



monuments preserved to this day is the famous mausoleum of Akhmet Yasevi built in 1399. Turkestan is a small town. The only big industrial enterprise is a cotton ginnery.

Kzyl-Orda, formerly known as Perovsk and as Ak-Mechet before that, on the banks of the Syr-Darya, was the capital of Kazakhstan during the 1925-29 period. At present it is a regional centre with food and light industries favoured by the town's position as the centre of an important agricultural area which supplies them with raw materials. The dam now being built on the Syr-Darya in the vicinity of the Kzyl-Orda will, when completed, considerably enlarge the irrigated area, reinforce the town's power base and contribute to the development of its industry. At the moment its chief enterprise is a highly mechanized rice factory which handles the entire rice crop of the Kazakhstan reaches of the Syr-Darya. There are also meat-packing, leather, and footwear factories.

Aralsk is located on the fringes of the desert on the shores of the Aral Sea at the point where the railway line skirts the shore. The port is the starting point for the shipping lines linking this area with the lower reaches of the Amu-Darya. Cargoes are transshipped here

from railway to vessels and vice versa. Fish is transported through Aralsk not only from the Kazakhstan sector of the Aral Sea and the delta of the Syr-Darya, but also from the southern stretches of the Aral Sea. The town, with large fish-curing and refrigerating plants is a centre of the fish-processing industry. Freezing barges, refrigerating ships and trawlers are built in the Aralsk shipyards. Well-appointed trawlers and motor-boats, the latter equipped for deep-sea fishing, have replaced the old "tubs" of pre-revolutionary days.

Local salt-mills supply the refrigerating vessels and fish-curing plants with all the salt they need. Salt and sulphates, the latter used in the glass-making industry, are extracted in the lakes situated north-west of the town. Domestic salt is extracted from the biggest of these—Lake Dzhaksy-Klych. The sulphates are obtained from the "dry" lakes, located to the south of Dzhaksy-Klych. The salt and sulphates deposits in this area are measured in tens of millions of tons. Extraction is 100 per cent mechanized.

The glass industry in Aralsk is based on the local quartz sands and sulphates.

Taldy-Kurgan, a regional centre in the eastern part of Southern Kazakhstan, was form-

erly a village. It is now a large town with highly developed food industry and a tool-making factory under construction. Trees, shrubs and flowers abound in the town, watered by the channels that run along its streets.

CENTRAL KAZAKHSTAN

Central Kazakhstan comprises the vast Karaganda administrative region, which, in addition to being the geographic centre of the republic, is its power heart and metallurgical base. The region is overwhelmingly industrial, producing more than a quarter of Kazakhstan's manufactures. The industrial population, concentrated in towns and workers' settlements, is much larger than its rural counterpart.

The region's location deep in the heartland was at first unfavourable for its economic development. Separated from the large industrial centres by hundreds of miles and lacking railroads, this area in pre-revolutionary times and during the first years of Soviet power was not in a position to develop industry to any great degree. Rapid expansion began only in the thirties, when new railways linked

Karaganda with Petropavlovsk and other industrial points in Northern Kazakhstan, with Magnitogorsk and other towns in the Urals, with Dzhezkazgan and Balkhash. From then on, Central Kazakhstan began to occupy a prominent place in the republic's economy as a centre of heavy industry. The post-war years have seen the construction of the Akmo-linsk-Pavlodar and the Mointy-Chu railway lines which give Karaganda outlets to the Irtysh Valley, Southern Kazakhstan and Central Asia. As a result of these developments the central location of the Karaganda region has become an asset.

Its industry is based on rich mineral deposits, chiefly coal, copper and iron ore. Proximity of the Karaganda coal basin to the biggest copper and iron ore deposits in the U.S.S.R. favours the development of heavy industry.

Most of the Karaganda region lies within the area of the Kazakh Low Hills, the geological history of which explains the presence of abundant metal ores and the comparative ease with which they can be discovered, explored and worked.

However, exploitation of this wealth encounters major difficulties in the shape of

scarcity of water—it is a zone of arid steppe and desert. The local rivers have a scant water supply and, notwithstanding construction of dams to retain the spring flow, cannot fully satisfy the requirements of the large and ever-growing industrial centres.

In the past agriculture in the Karaganda region was solely extensive. Herds grazed here in spring, but left with the onset of the heat when the grass on the steppe withered and shrivelled. Only along the region's northern marches was there modest crop-raising in pre-revolutionary times. Absence of crop-growing and of a settled population greatly hindered the establishment of industrial centres.

Nowadays the economy of Central Kazakhstan is located in islands. The main centres are the industrial towns, found as a rule in the vicinity of mineral deposits. Around them we find belts of suburban farming which supply the industrial population with vegetables, milk and meat. Vast tracts of uninhabited pasture-lands stretch for hundreds of miles between the centres of industry. Only in the north-east of the region is there an agricultural population similar to the settled areas in the north of the republic. Wheat, millet,

sunflower and vegetables are grown on a considerable scale.

The town of Karaganda* is the chief industrial centre of the region. Industry in the area dates from the middle of the XIXth century when copper ores began to be extracted by Russians and afterwards by foreign capitalists. In those days Karaganda was a tiny settlement; its mines were part of the Spassk copper works. The present industrial area came to life during the First Five-Year Plan. Here in the bare uninhabited steppe, with the laying of the railway, a new centre of industry sprang up in the space of two or three years and quickly outstripped the older towns. By 1956 Karaganda's population had increased to 350,000.

The main industry is coal mining. Enormous deposits are concentrated in the Karaganda coal basin, which extends almost 60 miles from west to east and 12 to 24 miles from north to south; it covers an area of 771 square miles.

Coal lies in 50 seams and layers—some

* The name "Karaganda" derives from the shrub which grows here and which in the Kazakh language is known as *karagana*

seams being up to 17 feet thick, while others reach 26 and 27 feet. In the aggregate the seams have an over-all thickness of 166 feet. The compactness of the deposits makes it possible to concentrate extraction on a relatively small territory, which is a great advantage. Other favourable factors are the consistency of the seams and the small quantities of water in the mines. In some places the seams reach the surface. The average depth of the mines in the Karaganda basin is not more than 270 feet (by way of comparison it can be pointed out that in Western Germany half the coal extracted is taken from mines well over 2,000 feet deep). The shallowness of the mines, while it lowers cost of production, causes considerable ground subsidence, which impedes urban construction.

In addition to the coal there are large deposits of brown coal, some of the seams reaching a thickness of 40 feet. The brown coal lies fairly close to the surface and is extracted by open-cast methods.

The coal has a high calory content and is excellent for coking purposes.

Cutting, raising and loading on to railway cars are mechanized. Altogether the combines extract 80 per cent of the entire coal output.

Leading combine operators cut about 29,000 tons a month. One combine produces more than four times the amount of coal extracted in the whole of Karaganda before the Revolution. At the moment hydraulic coal-cutting is being introduced. Powerful hydromonitors, emitting a jet of water under a pressure of 45 atmospheres, rip open the seams; the coal is broken up and together with the water is brought to the surface. Hydraulic coal-cutting reduces cost of production by half. By 1960 it is anticipated that 15 per cent of the coal will be cut by this method.

Fire-damp exists in large quantities in the Karaganda mines. Special ventilation installations, however, safeguard the miners against its dangers. Some of the seams are de-gassed beforehand. Plans are in hand for using the gas (about 500,000 cubic metres daily) for domestic purposes.

Karaganda supplies coal not only to Kazakhstan but also to the neighbouring areas—the Urals and the republics of Central Asia.

In addition to coal mines, Karaganda has a synthetic rubber plant, several machine-building works which supply the mining industry with equipment, a cement factory and plants making other building materials; there are

also a meat-packing factory, flour mills, clothing and footwear factories, bakeries, etc. Under construction are confectionary-biscuit, furniture and bed-making factories, and a factory making china- and enamel-ware

Work has begun on the Novo-Karaganda electric power station (which will be the biggest in the republic), in the vicinity of Topar, south-west of the town. The storage lake, along with meeting the water needs of the power station, will supply water to new coal-mining districts of Tentek and Churubai-Nura.

Karaganda's No. 1 problem is that of water supply. There are no large fresh water ponds or lakes in the vicinity. A dam has been built on the River Nura to retain the spring flow. The Nura storage system is the chief source of water supply for the industrial needs of Karaganda and Temir-Tau. Subterranean waters are the main source of drinking water for the urban population. For irrigation purposes dams have been built on a number of small streams.

As a town Karaganda has features all of its own. It is not a single entity in the usual sense of a town, but consists of approximately 60 settlements and townlets, interspersed with coal mines. They are scattered over an im-

mense territory 25 miles long and 15 miles wide. Only in recent times have its separate sections begun to link up. The old town, consisting of numerous settlements, forms the geographical centre, and southwards from it is the new town which is much more modern and is an administrative, economic and educational centre. The new town is distinguished for the excellence of its buildings, parks, gardens and boulevards. Among the more impressive buildings are the Miners' Palace of Culture and the summer theatre. For greenery Karaganda surpasses many towns situated in much more congenial conditions. There are seven sq. metres of greenery for every inhabitant. Unlike Alma-Ata, one hardly sees irrigation channels in the Karaganda streets. Hoses take the water direct from pipes.

There are a number of colleges and technical schools in the city and a television centre is under construction.

A children's railway has been built on the banks of the lake in the new town.

North-west of Karaganda, near the Nura storage lake, is the town of Temir-Tau.* Large

* In the Kazakh language Temir-Tau means "the iron hill"

steam power stations generate current for Karaganda. There is an iron and steel plant in Temir-Tau and another is being built to the east of the town near the Solonichka railway station. This will be the second biggest plant of its kind in the U.S.S.R., coming after the Magnitogorsk works. Other enterprises under construction are two powerful blast furnaces with a scheduled capacity of 1,350,000 tons, several open-hearth furnaces and a continuous sheet mill.

Balkhash, the chief centre of the copper industry, stands amid a dreary desert on the northern shore of the lake of the same name. In the past, because of the grim natural conditions, the Balkhash district was practically uninhabited. Even the nomads rarely visited it. Its development dates from 1931 when work was begun on the copper-smelting plant. The Karaganda-Balkhash railway, built in 1936, linked Balkhash with the rest of the country. A huge industrial centre with a population of nearly fifty thousand grew up on the formerly waste ground.

The Balkhash copper-smelting plant is the most powerful of its kind in the Soviet Union. Among its many sections is the biggest concentration factory in the country. In addition

to the copper, molybdenum is extracted from the same ore. The copper is refined on the spot. Here, too, is a rolling plant. There are also a mechanized brickworks, fish cannery, repair shops, a power station and food and light industry enterprises.

The copper-smelting plant was built on the shores of Lake Balkhash because it was only here that the concentration factory and the other sectors could get adequate supplies of water. In its natural state the Balkhash water is not suited for domestic purposes or for use in steam boilers. After filtering and chemical treatment the lake water is directed into the city's pipe supply system. Subsoil waters in the vicinity of the lake are highly impregnated with mineral salts and cannot be used for industrial, agricultural or domestic purposes.

Balkhash is well supplied with greenery. Much work is done in the town botanical gardens to acclimatize shrubs and bushes. The town has a House of Culture for metal workers, a mining-metallurgical technical college, dozens of schools and many libraries. A special hospital quarter has been built.

About 11 miles north of Balkhash is the town of Kounrad where the copper ore is

mined. The copper content is not very high (average 1.1 per cent), but the deposits are enormous. The low metal content means that the ore has to be worked in vast quantities—millions of tons every year.

Kounrad's copper mines are the biggest in the U.S.S.R. All operations are mechanized, open-cast methods are used in mining—after blasting the ore is loaded on to the 100-ton self-tipping wagons which take it via an electric railway to Balkhash. A modern miner's settlement has grown up around the ore workings.

Owing to the shortage of fresh water for irrigation, the establishment of suburban farms in the vicinity of Balkhash encountered many difficulties. Only a very small area was found suitable for cultivation. Pastures and meadows are poor and scarce; only the least fastidious animals can graze here—camels, goats and the sturdy fat-tail sheep. Within a radius of 30 miles round Balkhash there is not a single acre of good grazing ground. This necessitated setting up dairy farms at a considerable distance from the consumers. In order to supply Balkhash and Kounrad with milk and vegetables, suburban farms were developed both in the near vicinity of the

town and in more distant places, even on the south shore of the lake.

The other big centre of the copper industry—the Dzhezkazgan*-Karsakpai industrial area—is situated in the western part of the Karaganda region which is served by the Zharyk-Dzhezkazgan Railway. The rich Dzhezkazgan deposits stretch over an area of 40 sq. miles. The seams are from 5 to 13 feet thick and in some places up to 60 feet.

The conditions for ore extraction are very favourable as there is very little underground water and the crust is so strong that no timbering is needed in the workings. In some places open-cast methods are used. Silver, lead and molybdenum are found in some of the deposits.

The Dzhezkazgan ores were worked some 3,000 years ago. In ancient times, according to Academician Satpayev, over a million tons of copper ore were extracted in Dzhezkazgan.

The ore is refined in the Karsakpai smelting plant. Some of it is shipped to the Balkhash plant and even to the Urals. At the moment a smelting plant is being built in Dzhezkaz-

* Literally translated the word Dzhezkazgan means "the place where copper is found."

gan, in the immediate vicinity of the ore workings.

The Dzhezkazgan-Karsakpai industrial area lies on the border of the desert-steppe and desert zones. Annual precipitation does not exceed 100 millimetres. Crop-raising is possible only in conditions of artificial watering—the water from the ore workings being used for the purpose.

Fresh water is obtained from the River Kengir and from artesian wells.

NORTHERN KAZAKHSTAN

Northern Kazakhstan, now the granary of the Soviet Union, is one of the main virgin soil areas. At the same time it is the chief centre of industrial expansion in the republic during the current five-year plan.

It is made up of the Kustanai, North-Kazakhstan (capital Petropavlovsk), Kokchetav, Akmolinsk and Pavlodar regions.

It occupies the southern part of the West Siberian Lowlands, the northern districts of the Low Hills and the Turgai Tableland. The area as a whole slopes towards the north. Most of Northern Kazakhstan's rivers belong

to the system of the Irtysh, which flows through the Pavlodar Region.

The main transport artery, intersecting the whole of Northern Kazakhstan from west to east, is the Magnitogorsk-Akmolinsk-Pavlodar-Barnaul railway which affords links with the Urals and the Altai territory. The Petropavlovsk-Akmolinsk-Karaganda railway intersects the area meridianally.

The wealth of Northern Kazakhstan consists of its vast expanse of steppe which is used for non-irrigated crop-raising and partly for pasture and hay-cropping. Until recent times there were over 35 million acres of untouched land here, used only for pasture—about two-thirds of all the cultivable virgin and fallow lands within the boundaries of Kazakhstan.

The quality of this land varies. Generally speaking, quality declines towards the south because of the gradual change in climate, soil and plant zones. The most fertile areas, those yielding the most stable crops, are located in the northern and north-western marches. This is the region of grassland and woodland steppe. The woods, chiefly birch groves, are scattered over the steppe in clusters known locally as *kolkas*. This part of Northern



The Akhmet Yasevi Mausoleum near the town of
Turkestan

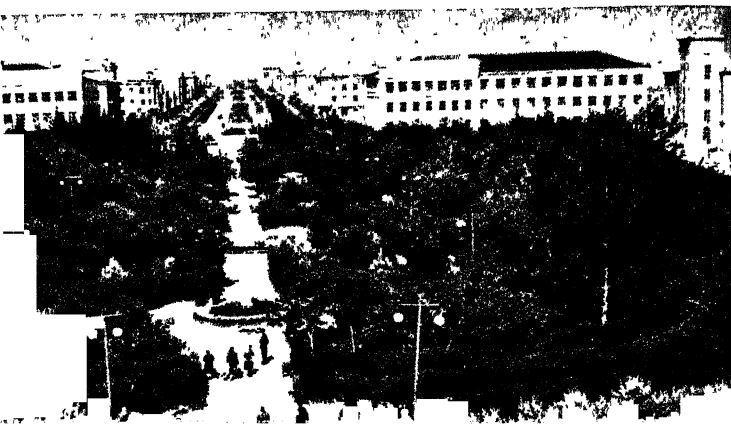
Hero of Socialist Labour Mustafa Aitkulov and
Honoured Miner Nurup Ibrayev





Panfilov Street in Temir-Tau, a town of iron and steel workers

Lenin Street, Karaganda



Kazakhstan has been most intensively cultivated.

To the south, on the elevated Turgai Tableland, in the Low Hills and farther east—in the Irtysh Lowland—lies the zone of arid steppe with predominating dark chestnut soil. In the Low Hills there is stony steppe with grass and feather grass covering. Here and there in this zone there are sectors of salt marshes unsuitable for agriculture.

Only the southern part of the Kustanai and Akmolinsk regions fall within the semi-desert zone where stable non-irrigated agriculture is impossible.

Shortage of water had always been a big obstacle to conquering the virgin lands in the steppe and especially in the arid steppe zones. In recent years much hydrogeological research has been carried out in Northern Kazakhstan with a view to utilizing subterranean waters. By the spring of 1956 the hydrogeologists had ascertained the volume and distribution of underground water on a territory of more than 25 million acres, thus assuring ample supplies of the precious liquid for the dozens of new state and collective farms.

What are known as "grain factories"—large grain-growing state farms—are much more

plentiful in Northern Kazakhstan than anywhere else in the republic. In 1956 the Virgin Soil State Farm in the Kokchetav region delivered over 50,000 tons of grain to the state, the Herzen State Farm in the Kustanai region delivered 58,000 tons, the Zheleznodorozhny State Farm in the same region delivered 66,000 tons. In 1956 each of 57 state farms in Northern Kazakhstan delivered more than 30,000 tons of grain. In Southern Kazakhstan there were only three such farms, and one each in the central and western parts of the republic.

Cultivation of the virgin and fallow lands still leaves unploughed vast stretches of pasture and meadows which, together with the products and by-products of crop-raising, ensure a solid fodder base for animal husbandry. Thus Northern Kazakhstan's agriculture organically combines crop-raising and stock-breeding, with the stock-breeding conducted much more intensively than in the central areas, where fodder-crop cultivation is practically non-existent.

But the region's natural wealth is not confined to its steppes. In recent years more and more mineral deposits have been discovered. The immense iron ore deposits found in the

Kustanai region ensure a solid raw material base for the iron and steel industry of the South Urals, Kazakhstan, and possibly the Altai territory. Extraction will soon begin on the Sokolovskoye and Sarbai low-grade phosphorite ores.

Vast deposits of brown coal and coking coal, estimated at 50,000-70,000 million tons, have been discovered in Ubagan (Turgai) Basin. One of the deposits—the Kush-Murun—will shortly be ready for exploitation.

Bauxites have been found in the southern part of the Kustanai region. Fire-clay, asbestos and other minerals have also been found here.

Large deposits of coal have also been discovered at Ekibastuz in the Pavlodar region. To the west of Ekibastuz, copper has been found at Boshchekul. Although the Boshchekul ores are poorer than those at Kounrad, the reserves are immeasurably greater. Other precious metals are found mixed with these ores.

Salt deposits in the lakes of the Pavlodar region have been exploited for many years. The salt is distinguished for its exceptional purity and excellent quality.

A vein of gold ores in the Akmolinsk and

Pavlodar regions extends from Stepnyak to Zholimbet, Bestobe and farther to Maikain.

Only recently large phosphorite deposits were discovered in the Kokchetav region—the centre of the newly cultivated virgin lands.

Economic development in Northern Kazakhstan envisages mastering its expanses of steppe and its natural wealth. In processing industry priority is being given to branches associated with agriculture, such as making harvester combines, oil-refining and the food industry.

Of the towns of Northern Kazakhstan, Pavlodar is developing most rapidly.

Situated on the banks of the Irtysh it is one of the oldest towns in Kazakhstan, having been founded in 1720. Before the Revolution it was a provincial townlet with no industry apart from a few flour mills. During the war years many enterprises were transferred thither from western regions. The building of the Akmolinsk-Pavlodar railway has opened up new prospects for the town.

Work has begun on the construction of a number of big enterprises in the town and in its near vicinity. One of these is a harvester-combine plant—the biggest in the U.S.S.R.—which will turn out 60,000 combines

annually. An aluminium plant under construction will use the Turgai bauxites. An oil refinery will be built within the next few years. The crude oil will be brought thither from Tuimaza (Bashkiria) via Omsk, which will be linked to Pavlodar by a 250 mile pipeline. Tractor fuel and other oil products will go from Pavlodar to Northern Kazakhstan and Western Siberia. Other construction work in hand includes a power station and enterprises of the light, food and building materials industries.

Concentration of industry in Pavlodar is explained by its favourable transport situation (at the point where the South-Siberian Railway crosses the Irtysh), by its proximity to the Ekibastuz coal, and also by abundant water supply from the Irtysh.

A ferro-alloys plant is being built 18 miles above Pavlodar, near the village of Yermak, on the Irtysh.

The salt extracted in the nearby lakes Tavolzhanskoye, Koryakovskoye and Kalkaman-skoye finds its way to places far beyond Kazakhstan's borders.

Ekibastuz, a new coal mining centre, is 70 miles west of Pavlodar. The Ekibastuz deposits of coking coal are eight miles long and

five miles wide. The seams have a thickness of more than 350 feet. Lying close to the surface and concentrated in an unusually small area, the coal can be mined by open-cast methods which means low production costs. In 1955 the first year of excavation at the Irtysh section yielded over two million tons. Another three sectors will shortly commence production.

The Maikuben coal deposits, south of Ekibastuz, now being prepared for exploitation, are expected to yield 5-6 million tons a year. Both places will get their water from the Irtysh.

Northern Kazakhstan's largest town, Petropavlovsk, founded in the XVIIIth century, is built on the River Ishim. In 1956 it had a population of 118,000.

Industry grew up here with the development of trade in cattle and animal husbandry products. The opening of the Trans-Siberian Railway gave a fillip to its expansion and it soon became an important centre of the meat, leather and flour milling industries.

Its biggest enterprises are a meat-packing plant, leather factory and a felt-processing factory. Cattle and agricultural raw mate-

rials are consigned thither not only from Northern Kazakhstan but also from the southern areas of Siberia.

There is also a plant producing small-capacity motors, and a tobacco factory. Enterprises under construction include a plant for rolling equipment, a power station, and soap-making, furniture and clothing factories.

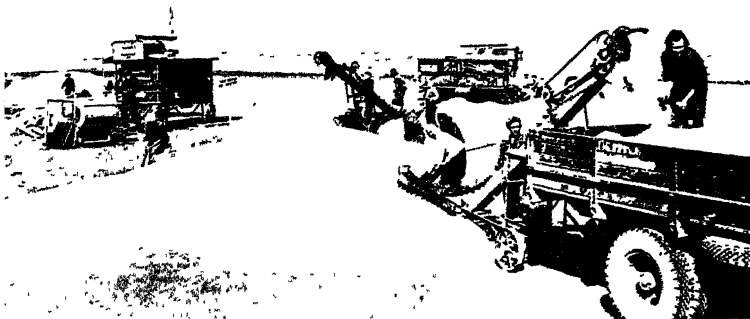
Akmolinsk, also on the Ishim, is the biggest railway junction in the Kazakh republic. The South-Siberian and Petropavlovsk-Karaganda-Chu lines meet here. Akmolinsk has an agricultural machinery plant known as Kazakhselmash. It is also a centre of the food industry and building materials production. The "Stroidetal" plant, now being built, will specialize in concrete slabs and timber details for grain elevators and warehouses. Work is also under way on factories for the production of dairy utensils and automobile spare parts and for soaking railway sleepers.

Kokchetav is a machine-building and food industry centre. In the coming years plants producing oxygen apparatus and laboratory furnaces, a dairy, a meat-packing plant and a clothing factory will be built here.

In the western marches of Northern Kazakhstan the town of Kustanai, on the River

Tobol, is growing rapidly. Kustanai arose in the last quarter of the XIXth century, when agriculture first began to develop in Kazakhstan. It soon became an important centre for trade in cattle, wool and other agricultural products. Flour mills and enterprises processing agricultural products made their appearance. During the war years engineering works and chemical factories were erected. Jointers, electric generators, oil motors, steam boilers and other equipment are made now in Kustanai. From the standpoint of transport communication Kustanai has fared badly, being located at the terminus of a branch line. This hinders the shipment of Karaganda coal to the town. The Kustanai-Tobol branch, now under construction, will be a short cut to the South-Siberian main line.

The Sokolovskoye-Sarbai ore concentration mills, with an annual capacity of 10 million tons of iron ore, is being built not far from Kustanai, on the Kustanai-Tobol railway. A new town known as Rudny is going up here. The ore will be mined by open-cast methods and processed in the new mills. Over 1,765 million cu feet of earth had to be removed in order to uncover the ore

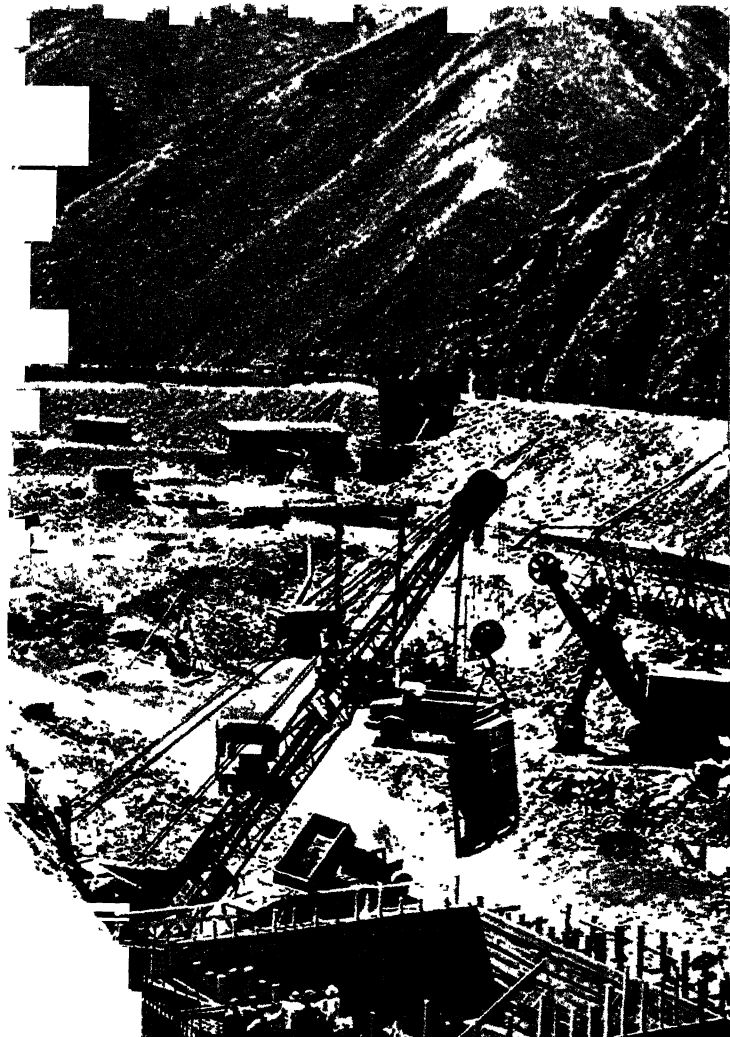


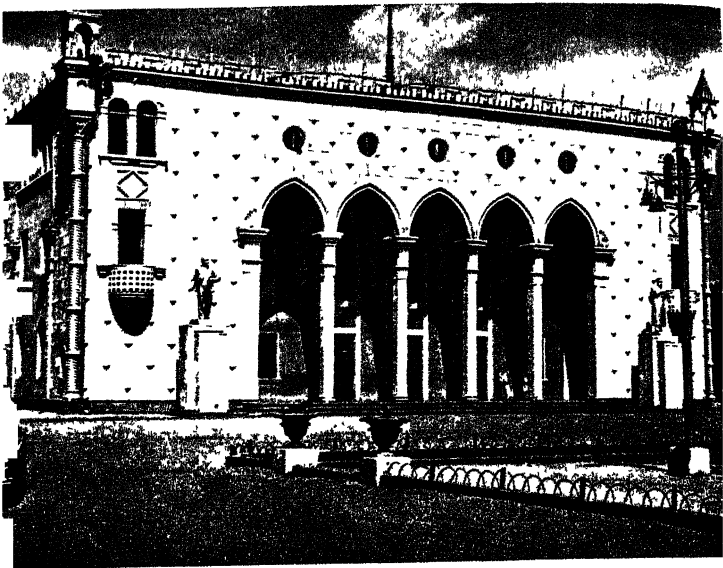
Svobodny State Farm in the virgin lands (Akmolinsk region) has gathered a bumper crop

Residential building in Balkhash, built 20 years ago on what was uninhabited desert









Oil workers' House of Culture in the "gypsum town,"
Guryev

EASTERN KAZAKHSTAN

Eastern Kazakhstan occupies the mountainous part of the republic wedged in between the Altai territory of the R.S.F.S.R. and Sinkiang. It includes two regions—Semipalatinsk and East-Kazakhstan

The two determining factors for Eastern Kazakhstan are the Altai Mountains and the River Irtysh.

The western stretch of the vast Altai mountain country—the so-called Rudny Altai—is part of this region. The fairly low ranges of the Rudny Altai—Ubinsky, Ivanovsky and Ulbinsky—extend from north-east to south-west almost at a right angle to the Irtysh. In the valleys between the ranges, the rivers Uba, Ulba and Bukhtarma—Irtysh tributaries—flow in the same direction.

The Rudny Altai mountains were formed in one of the earliest geological periods. Magma, formed in the clefts in the earth's crust during powerful upheavals, is the source of numerous ore deposits. Centuries of erosion have exposed the ore-bearing seams.

The main wealth of the Altai region consists of immense quantities of complex ores concentrated in hundreds of deposits, the

most important of which are the Ridder (Leninogorsk) group, Zyryanovsk, Belousovka, Beryozovka and Nikolayevka deposits. The Altai ores contain zinc, lead, copper, gold, silver and cadmium in varying proportion, plus admixtures of molybdenum, bismuth, arsenic and rare elements. The ores are rich in gold.

No other country in the world has such immense deposits of complex ores as Kazakhstan's Rudny Altai, where more than half the reserves of zinc and lead in the U.S.S.R. are concentrated.

The rich Ridder zinc and lead deposits are distinguished for the exceptionally high metal content, but their small-grained structure complicates the enriching process.

In contrast to the other parts of Kazakhstan, the Altai is rich in timber. True, the woods near the towns have been cut to a considerable extent in the course of the past 200 years. Most of the woods are concentrated in the basins of the rivers Uba and Bukhtarma, with fir and larch predominating. Rafts are floated down the rivers.

The Southern Altai Mountains (the Naryn-sky, Sarimsakti and Kurchumsky ranges), with deposits of rare metals, although on

a lesser scale than in the Rudny Altai, also lie inside the border of Eastern Kazakhstan.

The low Kalbinskiye Hills, a continuation of the Rudny Altai, extend along the left bank of the Irtysh. Here, and in the adjoining left bank localities, there are deposits of tungsten, tin and gold. Tin is also found in the Narymsky Range on the right bank of the Irtysh on a territory embracing 4,000-5,000 sq. miles. Farther west the Kalbinskiye Hills slope gently and merge with the Low Hills.

The Tarbagatai Range located to the south is not rich in minerals.

The Irtysh, rising in China, runs from the south-east to the north-west of Eastern Kazakhstan; inside Kazakhstan, in the area east of Lake Zaisan, it is known as the Black Irtysh. The Black Irtysh flows into Lake Zaisan and emerges from it in the north-west, but now bearing the name Irtysh. Towards Semipalatinsk, where the Irtysh cuts its way through a mountain barrier, it resembles a mountain torrent. Its steep fall and the volume of water make the Irtysh an ideal river for hydroelectrical purposes. On its banks—formerly it was the chief transport route of East-

ern Kazakhstan—stand the oldest and largest towns in this area—Semipalatinsk and Ust-Kamenogorsk. Nowadays, the Irtysh, although still a vital waterway, has lost much of its importance to railways. On the other hand, with the construction of the Ust-Kamenogorsk hydroelectric station it has become the main source of power for Eastern Kazakhstan. Under construction at the moment are the Bukhtarma and Shulba stations, which will have a common grid system with Semipalatinsk and Pavlodar.

Extraction of non-ferrous metals in Eastern Kazakhstan dates from earliest times. Soviet archaeologists have established that tin and copper were mined in the Rudny Altai and in the Kalbinskiye Hills two thousand years ago. Bronze smelted here found its way to many countries. The remains of the ancient mines enabled the explorers to uncover many deposits.

Extraction of metals was renewed in the Altai shortly after the erection of Russian fortresses here in the first half of the XVIIIth century. A Russian industrialist, Demidov, opened the first ore-processing factories in the Altai. After his death the factories and ore-workings became the property of the tsars on the grounds that the Altai ores contained

silver. The region became the main source of Russia's silver mining. In the second half of the XIXth century, after the abolition of serfdom, the ore mines and factories, which had used the forced labour of serfs, declined. The mining of silver was stopped and at the end of the century the ore deposits were taken over by foreign capital.

The powerful non-ferrous metal industry established in Eastern Kazakhstan during the years of Soviet power yields considerable quantities of zinc, lead, copper, gold, silver, cadmium and other metals. For a long time industrial development in the Altai was retarded by the paucity of fuel. Construction of hydroelectric stations on the Irtysh has opened good prospects for the further development of metal production.

The vast expanses of steppe, foothills and alpine pastures and meadows provide an excellent base for animal husbandry. In the northern parts of the area, especially near the industrial centres, there is much livestock farming. Sheep-breeding is practised in the central and southern areas. The maral (a kind of deer, the horns of which when young are used for medicinal purposes), is bred in the Katon-Karagai district.

The Irtysh belt, especially in the foothills on the right bank between Ust-Kamenogorsk and Nizhnaya Shulba and the valley of the River Bukhtarma, offers the best conditions for crop-raising. Annual rainfall in the foothills ranges from 400 to 600 millimetres and there is an extensive stretch of black-earth soil. In the hills the rainfall reaches 1,000 millimetres. Crop-raising is practised chiefly at altitudes ranging from 1,000 to 2,500 feet, where irrigation is unnecessary. Wheat, rye, vegetables and melons are grown

The main transport arteries in Eastern Kazakhstan are the Irtysh and two railway lines which effect a junction on the Kazakhstan border at the Lokot Station. From here, one of the lines branches towards Semipalatinsk and thence to Ayaguz and Alma-Ata, the other veers south-east, in the direction of Ust-Kamenogorsk, where it is continued by two branches, one going to Leninogorsk, the other to Zyrjanovsk.

To this day Eastern Kazakhstan is not adequately served by railways. The shortage is partly compensated by road transport, which is the main form of transportation for many industrial localities. Chief among the automobile highways is the East Ring (Ust-Kameno-

gorsk-Samarskoye, Kokpekty-Georgyevka-Ust-Kamenogorsk) and branches.

Semipalatinsk, the largest town in this area, with a population of 136,000, is located at the point where the Turksib Railway crosses the Irtysh. Founded in 1718 as a fortress, Semipalatinsk had by the middle of the XVIIIth century acquired a reputation for commerce. In those days it traded with China and later it became a flour-milling centre. In our days most of its factories process agricultural raw materials. The biggest of these is the modern meat-packing plant. Associated with meat-packing is the leather industry. Leather and felt footwear and sheepskin overcoats are prominent among the town's manufactures. There are woollen mills, clothing factories, knit goods factories, and, of course, the traditional flour-milling. Metal-working enterprises include a factory making wind motors and there is a ship repair yard. New construction includes food-industry equipment factories, worsted mills and a cement plant.

Ust-Kamenogorsk, the second largest town in Eastern Kazakhstan, is likewise on the Irtysh. Founded in 1720, it was for a long time a remote provincial place with only one small

factory producing oil from the locally-grown sunflower. The opening of the railway in the 1930's, and especially the construction of the Ust-Kamenogorsk power station on the Irtysh, gave an impetus to its development with a result that it is now an important industrial centre, the heart of the Rudny Altai.

Pride of place among its industrial enterprises is taken by the zinc and lead plant. Under construction is a large engineering works which will produce mining equipment, chiefly for extracting ores.

Ust-Kamenogorsk is the scientific centre of the Altai. A mining-metallurgical institute specializes in matters pertaining to non-ferrous metallurgy.

Leninogorsk, formerly Ridder, is one of the older industrial towns in this area. The biggest plant here is the complex metals plant and the ore-working and enriching factories. It produces lead, copper and zinc concentrates and cadmium. Near the town, on the River Ulba, there is a hydroelectric station.

The Irtysh Copper Plant in Glubokoye receives its ores from the Belousovka deposits and concentrates from different places in the Altai, Urals, Eastern Siberia and other areas.

WESTERN KAZAKHSTAN

Western Kazakhstan extends in a lateral direction for some 750 miles and wedges deeply into the European part of the U S S.R., with the border approaching the delta of the Volga.

It includes the Aktyubinsk, Guryev, and West-Kazakhstan administrative regions

Notwithstanding its proximity to the North Caucasus, the Volga area and the Urals, Western Kazakhstan remains one of the most typical Kazakh areas. The climate is extremely continental, desert and semi-desert prevail, water is scarce and the centres of intensive economic life are dispersed over a sparsely populated area—all of which tends to make this area similar in many respects to Central Kazakhstan.

Much of the territory is covered by the Caspian Lowlands. In the east the southern end of the Ural mountain system peters out into an undulating plain. The Mangyshlak Peninsula, the low Karatau Hills and the Ust-Urt desert plateau take up the extreme south of Western Kazakhstan.

Chief role in its economic life is played by the Caspian Sea, the mineral wealth of the southern tip of the Ural Mountain Range, the

Ural-Emba oil-fields, the crop-raising belt in the north and the seasonal pastures of the arid steppe, semi-desert and desert zones.

The importance of the Caspian Sea lies chiefly in its fishing industry and its use as a waterway.

Over 60 varieties of fish are found in the Caspian. Of these the most valuable are the different varieties of sturgeon, some of which weigh up to a ton. Sturgeon caviar is world famous. Of the other varieties found in the Caspian, and in the River Ural where they spawn, the most important are Astrakhan herring, roach, bream, pike-perch, carp, ide and sprats.

The best fishing grounds are located in the northern, shallow part of the Caspian, which adjoins the territory of Western Kazakhstan.

There are over 40 fishing cooperatives and three state fishery bases. The catch is cured and canned in two canning plants and ten curing and freezing factories. There is, in addition, a number of floating curing plants.

Thousands of seals, which yield valuable fur and oil, are caught on the islands in the Caspian.

The southern tip of the Ural Range is an eroded mountain system consisting chiefly of

igneous rock Rich deposits of high-quality chrome ores are located to the east of Aktyubinsk in the neighbourhood of the Kandagach-Orsk railway. The most important are concentrated in the south-eastern part of the Kimpersai massif to the west and south-west of the village of Donskoye. The ores in the northern part of the Kimpersai massif are of poorer quality. The south-eastern deposits provide excellent raw material for ferro-chrome, while those in the north chiefly for making fireclay.

Nickel ores are found nearby and supply the raw material for the Orsk nickel plant in the neighbouring Orenburg region of the R.S.F.S.R.

Phosphorites are found near Aktyubinsk.

Small coal deposits, used chiefly because of their proximity to transport lines and industrial centres are located near the Orenburg-Tashkent Railway.

The reserves in the Ural-Emba oil-fields in the Caspian Lowlands are enormous and the oil is found fairly close to the surface. The chief drawback is that the deposits are dispersed over a vast territory.

Natural bitumen and ozocerite are also found in the Emba oil-belt. The most im-

portant ozocerite deposits are located to the east of Bek-Beke and are used in the asphalt-concrete plant.

Potassium salts are mined at Lake Inder. Reserves of domestic salt in the region are practically inexhaustible. Salt mined in Lake Inder, which dries out in summer is highly prized in the fish-curing industry. Borates are mined to the north of the lake.

The crop-raising belt in Western Kazakhstan stretches around Uralsk and Aktyubinsk. Annual precipitation here amounts to 250-300 millimetres. Soils are of black earth and dark chestnut. Towards the south, precipitation declines rapidly and to the south of Uralsk and in the Aktyubinsk region, approximately on the latitude of Kandagach, the dark chestnut soil gives way to light chestnut and the arid steppe is replaced by semi-desert; non-irrigated agriculture becomes impossible, and there are numerous salt marshes. In some years the crop-growing areas suffer from drought. Wheat and drought-resisting millet are grown here.

The pastures of the arid steppe, semi-desert and desert zones cover a vast area. There are both summer (especially in the low hills of the Aktyubinsk region) and winter pastures, the

latter in the sandy Guryev region. In addition to sheep farming, horses and camels are bred here.

Small centres of irrigated crop-raising have arisen in Soviet times in the valley of the River Ural and in the Volga delta. Their chief function is to supply Guryev, the oil-fields and the fishing settlements with vegetables and fruit. The Kazakhstanneft Trust has its suburban vegetable farms and gardens in the lower reaches of the Ural, the river being used for irrigation purposes. Thanks to this, in summer and autumn, melons, tomatoes, cucumbers, carrots, sugar-beet and cabbage are available in abundance in the oil-fields at very low prices. In 1950 a poultry farm was set up here. Thousands of chicks, ducklings, goslings, etc., were brought thither by air from the Moscow region and the North Caucasus. The poultry farm supplies the local population with eggs and meat.

Rice is grown in the lower reaches of the Ural and in the Volga delta.

Much transport construction has been carried out in Western Kazakhstan during the years of Soviet rule. The main arteries are two railway lines which meet at Kandagach station; one runs from north-west to south-east

(Saratov-Uralsk-Aktyubinsk-Aralsk), and the other south-west to north-east (Guryev-Kandagach-Orsk). The Guryev-Orsk oil pipe-line runs parallel with the second railway. There are shipping lines on the Caspian and the River Ural. Construction of the Guryev-Astrakhan and Kungrad-Makat lines will greatly improve contact with the Caucasus and the Central Asian republics.

Uralsk, founded at the beginning of the XVIIth century, is Western Kazakhstan's oldest town. It is situated on the right bank of the River Ural. Before the Revolution, it was a depot for Uralsk Cossack troops. Meat-packing and flour-milling industries are of long standing in this town. Nowadays it is the centre for processing the crop and animal husbandry products of the surrounding areas. Its numerous factories produce tinned meat, sheepskin overcoats, felt boots, cereals and flour. A number of metal factories make accessories and spare parts for agricultural machinery.

Liquorice powder is made from the liquorice plant which grows wild in Western Kazakhstan.

While Uralsk specializes in processing agricultural products, another big town in West-

ern Kazakhstan—Aktyubinsk—is chiefly engaged in processing minerals. The biggest enterprise here is a ferro-alloys plant, built during the war. It uses the high-quality chrome mined in the Khrom-Tau area. Other factories make X-ray apparatus, equipment for the oil industry, compressors and spare parts for agricultural machinery.

Some 27 miles south of Aktyubinsk, at Alga Station, there is a large chemical works based on the Inder phosphorites and borates.

Guryev, at the mouth of the River Ural, separated from the other towns by desert and semi-desert, had no industry whatever in pre-revolutionary times. It is now the centre of the Ural-Emba oil-fields and of the fishing industry.

One of its biggest enterprises, the fish-canning plant built in 1934, turns out ten million tins annually. An oil refinery was built here during the war years. A machine-building plant makes equipment for the oil industry, while shipyards build fishing vessels.

Rapid industrial development has changed the town beyond recognition. The old part is located on the right bank of the Ural, while the new town, a product of Soviet times, has

grown up on the left bank. Abundant greenery, modern buildings and beautiful architecture are features of the new town.

A canal links Guryev with the Caspian Sea

To the east of Guryev, in the Caspian desert, at intervals of dozens of miles, are the oil wells of the Ural-Emba area and the oil settlements Dossor, Makat, Iskine, Kulsary, Koschagyl, Karaton, Koshkimbet, Teren-Uzyak and others. Of these, only Dossor and Makat date from pre-revolutionary times.

Development of the oil-fields in these deserts with their sparse population and absence of agricultural centres and means of transport, encountered great difficulties.

The problem of problems was water supply. Neither drinking water nor even water for industrial uses was to be had. There is hardly any rainfall in these localities in summer. The sole source of drinking water, apart from that carried from distant wells by camels and motor trucks, was the snow and ice gathered during the winter months and spring flood water stored in reservoirs. The problem was solved at the end of the 1930's by the building of the longest water pipe-line in the Soviet Union which takes water from the River Ural to the oil-fields. Together with its branches

the water pipe is 372 miles long. Every year it carries about 3 million tons of water from the river to the oil-fields. Transportation of the water is an exceedingly costly undertaking and water thus transported is too expensive to be used for irrigation purposes, especially in the more distant oil-fields; it is cheaper to import vegetables and other agricultural products than to transport the water for growing them. Consequently, the crop area in the oil-fields is exceedingly restricted.

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It would be difficult to find a more striking example than Kazakhstan of rapid transformation of a one-time backward out-of-the-way colony into a country with a highly developed agriculture and modern industry.

Diligent labour on the part of the Soviet people was needed to build modern metallurgical and chemical plants, mines and ore-workings, power stations and railways in such a forsaken and sparsely populated place as Kazakhstan then was, to plough the boundless steppe and bring life-giving moisture to the desert.

During the years of Soviet rule the Kazakh people have caught up with the advanced

nations. This historic leap was made possible thanks to the selfless aid given by the other peoples of the Soviet country and first and foremost by the Russian people.

At present Kazakhstan is experiencing a new upswing of its economy and culture. This has been facilitated by the industrial, agricultural and transport developments now taking place and by the steady stream of new settlers from the other parts of the country.

Soviet Kazakhstan is confidently treading the highway of progress.

